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Prelude to Tapestries in Stone: Understanding Cliff Palace Architecture

Wall “Tapestry” in Rooms 14(1) and 119(2) of Cliff Palace.

by

Larry V. Nordby

with contributions by

Joel M. Brisbin and Jim Mayberry

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Acknowledgements

In response to an unanticipated episode of water entry into the Cliff Palace, our work during this project was completed in two phases. During a first impromptu phase that was initiated as soon as water was discovered, the work force was cobbled together from whomever was available or could be spared from the regular jobs long enough to contribute. Thus, in many ways the "crew" was almost totally a volunteer workforce, even though some paid employees were involved. These individuals still had to return to their other jobs and do their "normal" workload after they assisted with various activities. The volunteers of the first phase include Becky Brock and Erica Campos, both of whom assisted with measuring and wall mapping. Volunteers Sharon Sage, Gay Ives, Amy Halsband Nordby, Joel Brisbin; and Mitch Burgard also helped when they could. Student Conservation Association (SCA) student Bryant Etheridge, a "quick-study", given permission to help with the photography by Hovenweep Superintendent Art Hutchinson, did so with big-time diligence. Preservation crew director archeologist, Kathleen Fiero, documented the doorways by drawing and photographing progressive wall damage and our efforts to control it, not to mention sharing her years of insight into Mesa Verde architecture. Linda Towle also shot some useful photos and provided overall managerial direction for the various work components of what seems best termed "the emergency Cliff Palace water damage management project." Mona Hutchinson supplied various library materials or helped locate historical items pertaining to Cliff Palace.

The aforementioned work done by these various people was interrupted by the need to carry out buckets of water and ice from the rear of the site, a task shared by some of the staff from the Division of Maintenance, and other individuals. This contribution should be mentioned here because it meant that we could have more time documenting and less time hauling. Additional misfortune smiled on us during this period, as the lengthy government shutdown extending throughout the holiday season assured that additional difficulty would be ours. It is unlikely that the shutdown led to further damage at the site, thanks to the work done by everyone when the situation demanded it.

In the second phase of our work at Cliff Palace, we were able to more comprehensively and methodically conduct the architectural documentation. The second phase of the work followed the acquisition of funding. This funding came from three sources. The first of these was contained within the base budget of Mesa Verde National Park, involving the salaries and other resources already at the Park. The second source was money allocated specifically for the work at Cliff Palace by the Colorado Historical Society (CHS) as part of their grants-in-aid program, with the project entitled "Integrated Architectural Documentation of Cliff Palace," (dubbed CHS Project No. 1996-02-111). Employees with CHS who helped signicantly in the pursuit and administration of these funds included Cyndi Breen-Nasky, Joanne Sanfillipo, Amy Spong, and Pam Temple. I appreciate their professionalism and assistance. Rovilla Ellis of the Mesa Verde Museum Association helped us in pursuit of funds from the State Historical Fund. Additional funding came from the National Park Service's Cultural Resources Preservation and Cultural Cyclic Programs, and the Service's Challenge Cost Share Grant Program. All of these sources substantially augmented the available funds from the State Historical Fund.

Once we had acquired funding, people who actually make a contribution when the project was underway include additional volunteers; especially the tree-ring crew members who worked with Tom Windes and Gay Ives. SCA and Brown University anthropology student, Gillian Epstein, helped with the documentation and measuring, later becoming more involved in the project as an NPS employee. The remaining people are all NPS employees who also worked on the project: Tom Windes (wood documentation and tree-ring crew director); Arthur Ireland and Erik Niemeyer (photography and photographic mapping); Jim Harper and Michael Dice (electronic database development); Torii Cooper (photography and drafting); Don Corbeil (digitizing, drafting, and image manipulation with AutoCad); Greg Munson, Brenda Magouirk-Nelson, and Michael Nelson (all were involved in mapping and preparing wall elevations); Mary Griffitts (geology); and Jim Mayberry and Joel Brisbin (both were involved with photography, documentation, and drafting). Jim also did all the data entry, image scanning, and annotation for the wall elevations. These were all very substantial contributions done as part of a complicated project. A special thanks to our editor Patricia Flint-Lacey, and to Laura Martin for designing the publication. The cover photo of Cliff Palace was taken by Marv Lynchard, whose professionalism and talent are greatly appreciated and highly admired.

Finally, I appreciate the interest that Mesa Verde National Park Superintendent, Larry Wiese, showed in extending our documentation efforts past the immediate sections of wall damage to those parts of the site that must be examined in order to understand and create the context for the more threatened parts, a strategy supported by Linda Towle, Chief of the Division of Research and Resource Management.

Larry V. Nordby

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Abstract

Water seeping into Cliff Palace (5MV625) in late November 1995 threatened the integrity of the site. Part of the mitigation plan included architectural documentation of the most threatened areas in Courtyard Complex M and Courtyard Complex J during the winter of 1995-1996. Additional funding allowed the development of a research design and more thorough documentation of affected and surrounding structures.

This architectural documentation study revealed that there were 141 rooms, 75 other architectural spaces (courtyard areas above kivas, other open areas, slab structures), and 22 kivas in Cliff Palace from A.D. 1278-1280. Only 25 of the rooms had hearths, implying that they were the only ones used as living rooms. We think these were the residential quarters of a small caretaker population of 25-30 households. Other rooms and open areas may have been used by people who came from nearby areas and used Cliff Palace for only a short period each year. The village of Cliff Palace was divided into two areas by a solid wall south of the Speaker Chief's House. This architectural division probably reflects a social dual division (moiety) known from ethnographic pueblo societies.

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Chapter 1

Introduction

This is a report of an architectural study of Cliff Palace (5MV625) in Mesa Verde National Park, Colorado conducted between 1995 and 1998. Water seeping into Cliff Palace in late November 1995 threatened the integrity of the site and architectural documentation of the affected areas was part of the mitigation plan. Although this work was conducted within an emergency framework, the guidelines for the architectural descriptions had previously been developed for work at other sites.

The architecture of Cliff Palace reflects the social organization of the Ancestral Puebloan people who built the structures during the thirteenth century. The detailed description of the architecture, the tapestries in stone, helps us to more fully understand the human interactions in the ancient society. This study revealed that there were about 150 rooms, 75 other architectural spaces (courtyard areas above kivas, other open areas, slab structures), and 22 kivas in Cliff Palace.

Only about 25 of the rooms had hearths, implying that they were the only ones used as used as living rooms. We think these were the residential quarters of a small caretaker population of 25-30 households. Other rooms and open areas may have been used by people who came from nearby areas and used Cliff Palace for only a short period each year. The village of Cliff Palace was divided into two areas by a solid wall south of the Speaker Chief's House. This architectural division probably reflects a social dual division (moiety) known ethnographically from modern pueblo societies.

Water Damage in Cliff Palace

Mesa Verde National Park staff members noticed a severe increase in the amount of water seeping into the back of Cliff Palace alcove in late November of 1995. Drops of water were falling from a large crack that separates a freestanding arch and ledge on which several rooms had been built. Water was also seeping from many pore spaces in the Cliff House sandstone. At rapid response meetings, Park management and staff developed methods to control the impacts of the water, compiled records about similar episodes of seepage in the past in an effort to understand the reasons for it, and planned a small-scale architectural documentation project. Two kivas and the rooms around them where the moisture damage was most severe were studied and described.

Damage to Cliff Palace was most acute in the Kiva J and Kiva M areas (Figure 1.1; in front pocket), although some moisture problems were also developing in other areas (most notably Kivas C and E). Behind Kiva J, Rooms 26, 27, and 28 were under assault from heavy water seepage from alcove pore spaces. It was difficult to capture this water using buckets, because walls were contiguous with the ceiling and seepage ran directly into the wall tops or ends. Ceiling drips also entered Rooms 26, 28 and Kiva J. This water was captured by buckets when possible.

The rooms behind Kiva M were suffering from the greatest impact. Moisture on the kiva walls produced dampness, carbonate deposition, and stone softening. Moisture in this area is probably a chronic condition since mossy vegetation forming on the floor west of Rooms 41 and 42 indicates a substantial amount of ambient moisture. The walls newly impacted by an increased moisture regime included the south wall of Room 49(the north wall of Room 44), and the west wall of Room 45 (the east wall of Room 44). The floors of Rooms 43, 44, 45, and 49 were very wet from seepage. In addition, ceiling drips were active in Room 46, atop the south wall of Room 45, and onto the low retaining wall, now Miscellaneous Structure (MS) 3, where the moss was growing. Moisture striking the terrace above Miscellaneous Structure 3 was moving through the northeast corner of Room 40, removing a small section of wall mortar and dampening the stone.

Architectural Documentation and Previous Research

The basic design for the architectural documentation work had been developed for Oak Tree House at Mesa Verde National Park. In this research design, the characteristics of walls are described; features such as hearths and doors (wall entryways) are also described. Based upon the detailed descriptions, the uses of the room are identified: living room, granary, storage (non-food) room, mealing room. Kivas and open areas are also described. From these data, relationships between the rooms are inferred: room suites, courtyard complexes, and village organization.

Previous research in Cliff Palace has been useful in the documentation work. Stabilization records have been essential and valuable but usually have a restrictive focus that has a crisis as its origin. Three contributions are particularly important because of their comprehensiveness: a stabilization history (Horn 1989, Chandler 1989), an inventory of the plaster distributions at Cliff Palace (Silver 1986), and an informal baseline survey of plaster designs (Copeland and Ives 1993). The researchers studied their topic of concern throughout the

entire site, rather than focusing only on "threatened" parts of it. Only the original excavation materials (Fewkes 1911), and the ground plan produced by architect Stanley Morse in 1934 and 1935 had a similar orientation.

Funding for the Research

We wanted to bring a broader, more proactive research program to conduct architectural documentation, at both Cliff Palace and elsewhere in Mesa Verde National Park. Seeking partial support for such a program, the Park had approached a number of external granting entities on several occasions for financial support to comprehensively document Cliff Palace. Park staff members had also participated in the internal National Park Service (NPS) process of competing for Cultural Resources Preservation Program and Cultural Cyclic funds to undertake an Historic Structures Report for Cliff Palace.

The documentation work reported here has been supported financially by several entities, including both of the internal NPS cultural program funding sources, and the Service's Challenge Cost Share program. The most critical of these funding sources, and one which provided an initial start to acquiring other funds, has been the Colorado Historical Society's (CHS) grants program, which supplied funds to support the crisis-driven documentation, which was later expanded to nearby areas of Cliff Palace. The CHS grants program awarded funds to the Mesa Verde Museum Association for this research.

Enriching Our Understanding of Cliff Palace

The work that has been done at Cliff Palace has provided an opportunity to assess what new kinds of information might be gleaned from research work. For a number of rooms within the most acutely threatened parts of Cliff Palace, the results of past work were compiled and organized into files for increased ease of use. We collected new data for those rooms, and generated this report to serve as a research design for a more extensive documentation and condition assessment program. This report applies the limited findings of a crisis-driven project (concerning only those areas impacted by water damage) to other areas of Cliff Palace that were not immediately threatened. We were interested in applying current archeological research approaches to the study of architecture and social organization. The results of this study will provide a more comprehensive interpretation for the public of what happened at Cliff Palace during the thirteenth century.

Although the original intent of this work was to focus on two parts of Cliff Palace that are now termed Courtyard Complexes J and M, and a few other areas threatened by seepage, we had the opportunity to complete other research. We obtained tree-ring samples and a wood inventory for the entire site. We drafted the first map of the Ledge Complex. We conducted a preliminary study of household groupings throughout the site, in order to create some kind of context for the portions of Cliff Palace that were studied more intensively. We also developed a basic construction sequence for the entire site, even though some of these observations will be refined as work continues. Finally, as a major benefit of the CHS funding, we developed a research design, to guide our future work.

Tapestries are known for their complicated pictorial designs, often depicting an important story from our past. The tapestries in stone in this report are the walls of Ancestral Puebloan homes. The study of the complicated architectural details of these walls, like the study of tapestries, has enriched our understanding of the past in Cliff Palace.

The chapters that follow include: a brief synopsis of past work at Cliff Palace, a summary of the archeological approach to architecture with a discussion of the documentation methods used during this project, a presentation of acquired and compiled data on each room and structure, and our conclusions and interpretations with directions for future research.

Chapter 2

Previous Work at Cliff Palace

Archeological interest in Cliff Palace began almost upon the eve of the site's discovery in the late 1880s, and continues up through the present day. The magnificent alcove setting, the four-story architecture, and the sheer number of standing walls combine to characterize Cliff Palace as the largest cliff dwelling in the Western Hemisphere. Previous work has included the drafting of site maps, excavation, stabilization, and studies of the wall plaster.

The size of Cliff Palace is usually measured by the number of rooms and kivas in the alcove. Over the years, the various estimates of the number of rooms have conflicted. The uppermost estimate was about 250 rooms and 23 kivas. We now think that there were about 150 rooms, 22 kivas, and about 75 open spaces in Cliff Palace that were used in the late A.D. 1200s. Some of the open spaces were analogous to rooms, but were probably used in slightly different ways. Existing tangible evidence indicates that very few of the rooms were used as living quarters or "residential rooms." We think there was a small caretaking population of 25-30 households living in about 25 residential rooms, and that the kivas may have been used by people who came from nearby areas to use Cliff Palace for a short period of time each year. Cliff Palace retains its importance as a large and unique gathering place for the local community even though the actual room count has been reduced as a result of our work. Continuing research at Cliff Palace will expand and perhaps alter our present view of this truly remarkable site.

The Early Years: Nordenskiold and Fewkes

Accompanied by the famous Wetherill family, Baron Gustav Nordenskiold visited Cliff Palace and penned the first description of the site in 1893 (Nordenskiold 1893: 59-66). His description was useful to us and others who have subsequently studied Cliff Palace (Fewkes 1911: 15-19). None of the units mentioned by Nordenskiold in his narrative were studied during our documentation program, but they are depicted in his site map (Nordenskiold 1893: facing p. 60) (Figure 2.1). Nordenskiold introduced the first recorded numbering system for the site. The map is quite accurate in terms of the areas we studied in the winter of 1995 and 1996. Rubble apparently covered a number of the kivas that were not mapped. The scale of the map makes it useful, even though the numbering system was subsequently changed by Fewkes.

J. W. Fewkes excavated and stabilized Cliff Palace in 1909, publishing his results in 1911 (Fewkes 1911). The objective of his field work was to make the site interesting and safe for visitors to Mesa Verde National Park. He referred to walls, floors, roofs, and fire hearths as the "Major Antiquities" of the site and provided a description of the most interesting structures (Fewkes 1911: 25). The rooms were numbered and the kivas were designated with letters.

Evaluating Fewkes' site plan (Figure 2.2) was perhaps the most fundamental aspect of our work. The architectural units that we documented during the winter of 1995-1996 are shown accurately, with one major exception. That exception is at the rear of Room 23. On Fewkes' map of Cliff Palace there is a wall that subdivides the room and falsely assigns a portion of Room 23 to Room 20 to the south. In addition, a number of small details in other parts of the site create the impression that bonding and abutment patterns are different from what we observed. Both of these discrepancies call attention to one aspect of Cliff Palace archeology that Fewkes, like other archeologists of his era, failed to study intently enough: village growth and dynamics.

During the Fewkes archeological era there was no tree-ring analysis available and no way to date the construction changes that were made in Cliff Palace. Fewkes and other archeologists could only help the public share a spectacular accident of fortuitous preservation. However, Ancestral Puebloan people did make changes to the architecture of Cliff Palace during the thirteenth century. They remodeled rooms, they added walls, they applied plaster; and painted designs on the walls. These changes were not the subject of archeological study at Mesa Verde until the Wetherill Mesa Project results were reported during the 1970s. Currently a comprehensive wood sampling project is providing dates for all the wood used in construction of Mesa Verde's sites.

Fewkes made other observations of the uses and function of the rooms and other structures in Cliff Palace. His interpretations often make very good sense, but there are insufficient data to evaluate them. He observed certain characteristics of rooms in Cliff Palace which we have now been able to thoroughly document in evaluating his interpretations. These few examples deal with Fewkes' attempts to approach issues of room function and use.

> The inner walls of Room 19 were plastered; the outer wall was left rough [Fewkes 1911:43].
>
> The presence of sticks projecting from the walls of this room adds weight to the conclusion that it was used for storage. There is no indication of a fireplace [Fewkes 1911:43].

> As this chamber opens directly into the kiva, we may regard it as a repository for kiva paraphernalia;…[Fewkes 1911:44]

Fewkes (1911:33-34) classified secular rooms into six categories: (1) living rooms; (2) milling rooms, (3) storage rooms; (4) rooms of unknown function; (5) towers; and (6) round rooms. In a general way, Fewkes discusses his rationale for assigning individual rooms to a particular class, but the assignments are not demonstrated because his report supplies so little descriptive data on the nature or characteristics of architectural spaces. In addition, Fewkes did not assign each room to a category.

As part of his interpretation, Fewkes divided Cliff Palace into quarters. He based his divisions on the gross architectural character of the areas rather than methodical analysis of details or architectural evidence of site growth. For example, he believed that the "Old Quarter" was the earliest part of the site largely because of slab structures at the rear of the alcove. The "Plaza Quarter" was characterized by the most rooftop kiva space, and therefore the most well- developed plazas. The "Tower Quarter" could best be characterized by its tower, even though it may simply have been a fortuitous remainder of a multiple-story room block. The "Northern Quarter" is at the northern end of the alcove.

In summary, both Nordenskiold and Fewkes provided a solid beginning for our analysis of Cliff Palace. Their work in the late nineteenth and early twentieth centuries provided useful maps, architectural descriptions. and interpretations.

The Morse Mapping Project (1934-1935)

Among the most comprehensive activities ever undertaken at Cliff Palace was a project funded with Public Works Administration (PWA) monies from 1934 to 1935. Architect Stanley Morse was hired to make a map of Cliff Palace. Also, as part of the project, there was to be complete photo documentation. These photos were designed to provide a record of the stabilization and preservation work done under the general direction of Earl H. Morris and daily supervision of James "Al" Lancaster. Horn (1989) provides a fine synopsis of the project.

Morse's map, a beautiful piece of work, was completed in several large sections, on separate sheets of linen. Chester Markley took the photographs, which specifically show the areas worked on by the stabilization crew. Markley also photographed placards identifying key survey points and elevation measurements that were used by Morse. Unfortunately the photography did not extend into the southern part of the site, where we worked in 1995 and 1996. The photo documentation was not completed because of lack of funding. Similarly, most of the stabilization work was not in the areas where we worked. It involved the northern end of the site, especially the Speaker-Chief's House.

Park correspondence attests to the fact that Morse's efforts to do a superlative job resulted in map development taking longer than Earl Morris would have liked. Still, the map contains a great deal of detail. Realizing that many of the walls of Cliff Palace are not plumb and the corners are not square, Morse mapped points on the wall tops as well as bases, and individual features such as niches and ventilators. He prepared the map as a single rendering on linen for each portion of the site. To provide some guidance on what he was depicting, Morse developed a number of line codes (broken lines, dotted lines, and solid lines) that all meant something different. The scale of the finished drawing (drafted in feet and inches) was fairly large, such that 10-12 large sheets were needed to present the entire site. Although the scale at which the final drawings were made was originally unknown, faint pencil marks on the drawing, coupled with radial baselines, indicate that the scale was two feet per inch. Most of these drawings using pencil on linen have proveniences marked, such that rooms and kivas are identified.

Later, Morse began to transform his linen drawings onto film using ink, a process that he evidently did not complete, since there are no proveniences or other labels on this version. Somewhat paradoxically, there are a couple of inked versions that have no pencil on linen versions, indicating that some of this material has been lost. Parenthetically, a letter from Park archeologist Jean Pinkley to Stanley Morse written in the later 1950s or early 1960s indicates that the map at some point had been misplaced by Park personnel, and inquiring minds wanted to know whether he had it or a copy. He responded in the negative. Since then, with the exception of those portions which probably have become lost, the map has been located in the Mesa Verde Research Center.

Although the Cliff Palace map made by Morse contains vast amounts of information, the original plan to augment the map with exhaustive photo documentation would have greatly enhanced our knowledge of site architecture and the general appearance of the walls. Unfortunately, the project was not completed. There simply are some kinds of information of major import to archeologists that cannot be transmitted by ground plan alone. Filling this research need by supplying wall elevation drawings and photographs for the rooms and kivas, was one objective of our work in 1995 and 1996.

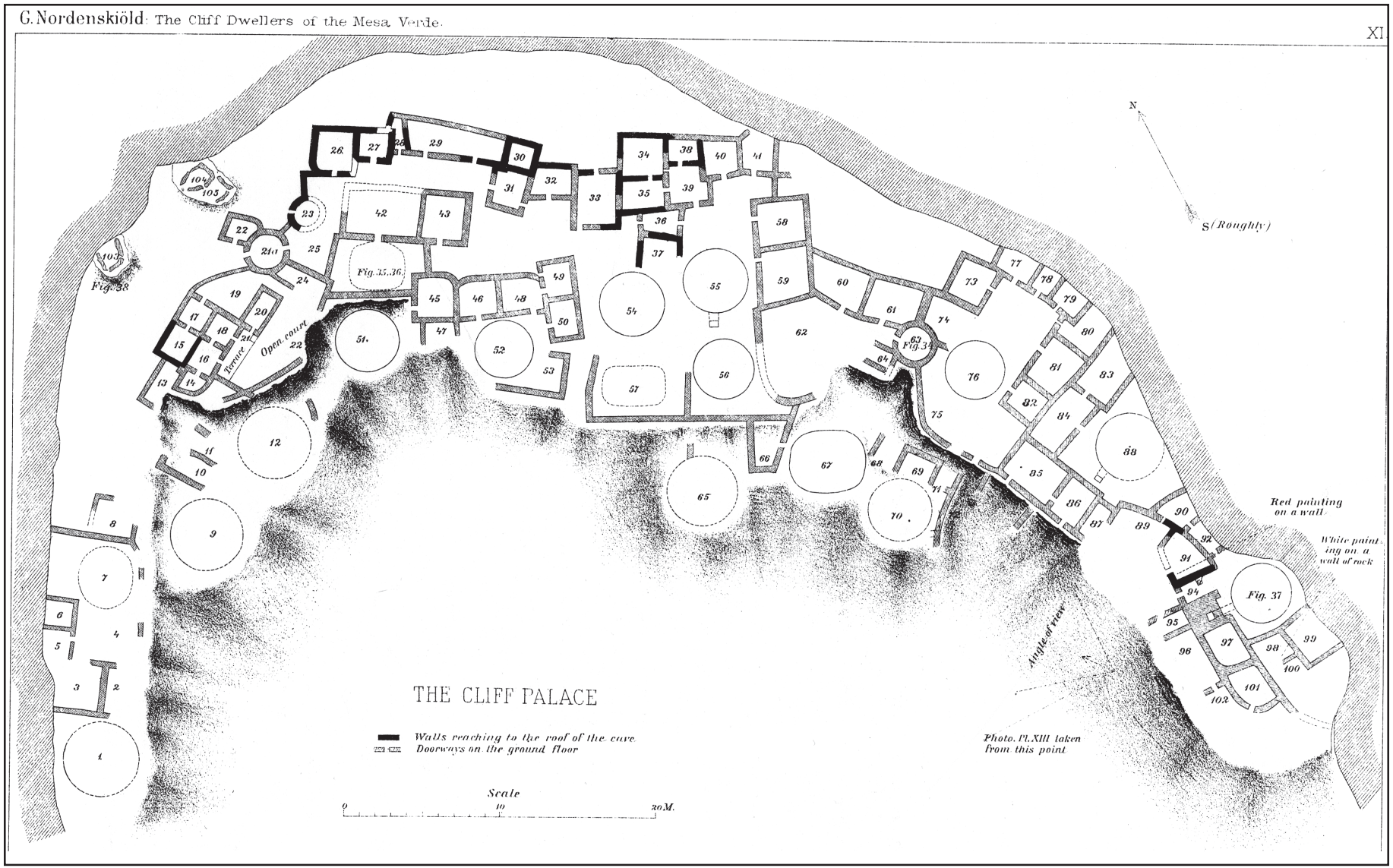

Figure 2.1. 1893 Nordenskiold site map of Cliff Palace. (Nordenskoild 1893: facing page 60)

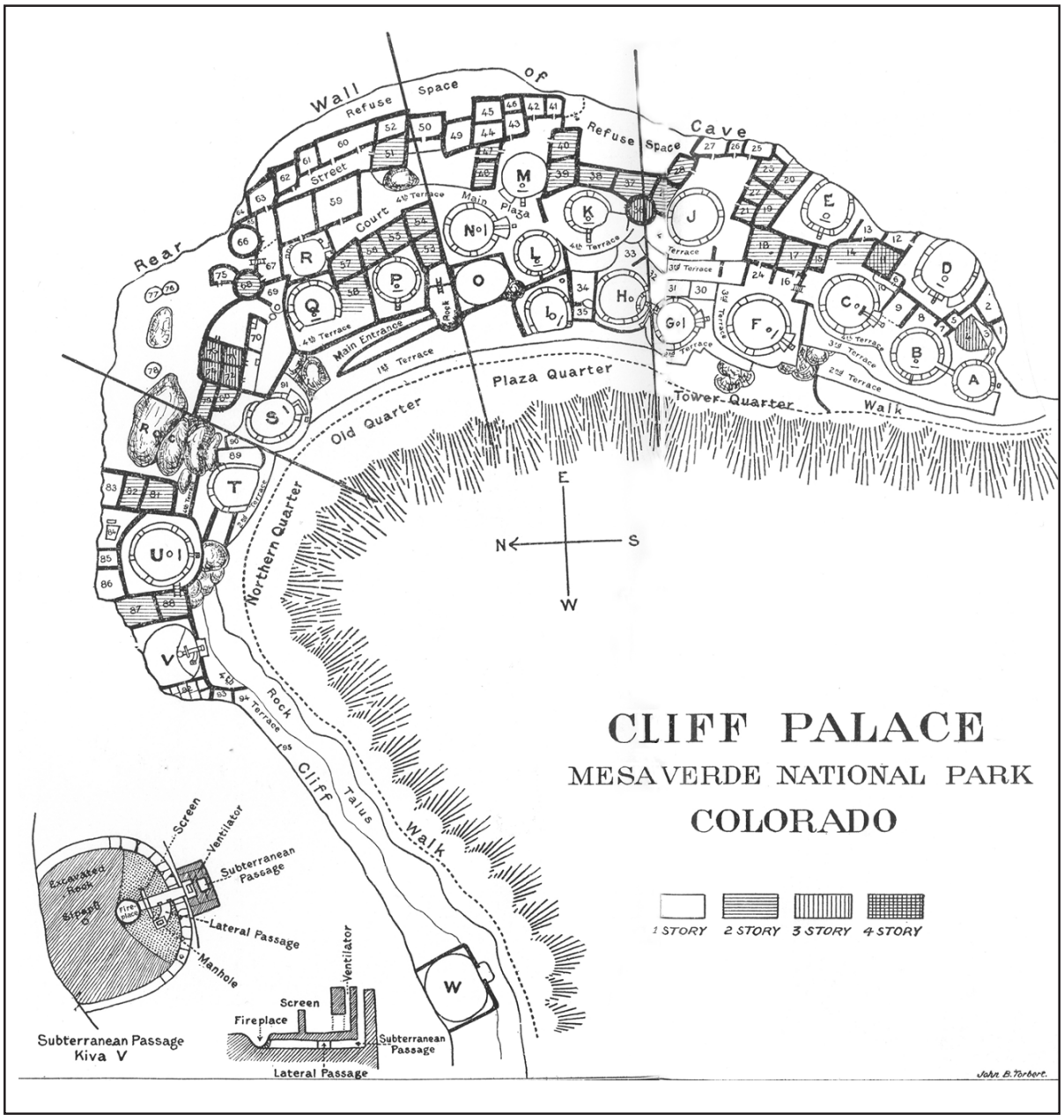

Figure 2.2. 1911 Fewkes site map of Cliff Palace (Fewkes 1911: Bulletin 51, Plate 8)

The L.D.A. Map of 1965

Another map of Cliff Palace was prepared in 1965. A blueline (ozalid) copy of this map came to light when Park staff began seeking records pertaining the history of water seepage. The map includes the a drainage tunnel built in 1961, a scale, and the initials L.D.A. We have not been able to discover the identity of L.D.A., if in fact those letters refer to an individual. David "Al" Decker, who succeeded Al Lancaster as the stabilization crew field director, helped map the tunnel after it was built, and the tunnel is shown on the map. We checked the orientation of the tunnel with tape measures and a Brunton compass as part of this project, and the plotting seems to have been relatively close.

The L.D.A. map of 1965 shows stonework around the kivas, but because of the scale, it is unlikely that the stonework shown is anything other than a convention designed to highlight the kiva structures. Likewise, room walls are shown as simple double outlines.

The 1965 map should be used with caution. A researcher might interpret the ways that the walls are drawn as showing the abutment and bonding pattern of the architecture. The areas that we documented recently had a totally differing abutment pattern from that which

was shown on the map. Any implied abutment pattern may have been beyond the intention of L.D.A.

Stabilization Work at Cliff Palace

Stabilization has continued at Cliff Palace following the initial work by Fewkes in 1909 and the PWA Project of 1934-1935 (Stabalization Record Collection, 5MV625). The Morse mapping project was originally envisioned as a method for documenting ruins preservation work. Photo documentation has continued up until the present day, but has tended to become less intensive as the preservation work becomes less invasive. Regardless of when the work was done between 1935 and the present, photo documentation has been viewed as secondary to the "real" work of fixing the ruins.

The initial stabilization work, besides what was done at the north end of the site, continued up through about 1943, as a small-scale continuation of the PWA project. What is known about the work comes mostly from the daily journals of Al Lancaster.

Trail preservation, trail routing, and dealing with water at the rear of the site seem to have claimed most of the attention up until 1984, when repairs were made to some of the units that were documented during our project. For example, in 1961 the famed drainage tunnel was dug in an attempt to intercept ground water before it could enter the site. In short, that measure has proven successful based on the amount of dripstone on the walls of the tunnel and the perennially flowing nature of the water in it. During this period, the trail was also rerouted several times and other measures were undertaken in order to control visitor impact to the site. Those portions of the trail through the site have also been maintained by the preservation crew.

The history of preservation work at Cliff Palace has been compiled by Horn (1989:Table 2). Stabilization work done on each unit, including an inventory of photographic negatives, was compiled in the appendices by Chandler (1989). Both of these documents have facilitated our work in recording data based on provenience. We have not done further intensive research into the records beyond that which was done by Horn and Chandler. We accepted their work at face value, except when observations in the field suggested otherwise.

The work of Horn and Chandler was a study of paper records including photographs. Their purpose was to identify what stabilization was done. They did not collect new information at the site. In our fieldwork we have encountered preservation treatment that was not previously recorded.

We compared the information compiled by Horn and Chandler (primarily from the Morse Map) with what we saw in the field. On the map some stonework was annotated as original. Later stabilization modifications were then made on the pencil drawings in red. Our observations in the field suggest that some of what appears to be original work on the map may have been misidentified by later workers. We think that the diagonal cross-hachure on the Morse map reflects where the walls extend to the alcove ceiling, not places of stabilization. We also think that Fewkes repaired holes in the walls that are not reflected on the ground plan.

The Plaster Studies

Previous work at Cliff Palace included two important studies of the plaster which was applied to the walls. Silver (1986) developed an inventory of the distribution of plaster at Cliff Palace. Copeland and Ives (1993) described the plaster designs.

The topical orientation of Silver's (1986) study, and that of Copeland and Ives (1993) also supplied some basic information on preservation and stabilization, but was not included in the Horn and Chandler study. In particular, Silver's study resulted in a tremendous number of photographs of the site, predominantly in those localities where plaster was exfoliating. Comparing those photographs with those of Copeland and Ives seven years later supplies some interesting information about the rate of deterioration of plaster paintings and designs.

Summary of Previous Work

Previous work at Cliff Palace included: production of four site maps (Nordenskiold 1893, facing page 60; Fewkes 1911 Plate 8, Morse 1935; L.D.A. 1965), description in one section of a summary report (Nordenskiold 1893), one excavation report (Fewkes 1911), stabilization notes (by Morris, Lancaster, and Fiero; Stabalization Record Collection, 5MV625), a report of all previous stabilization (Horn 1989, Chandler 1989), and two plaster reports (Silver 1986, Copeland and Ives 1993).

This project attempts to compile information from the various earlier activities. Ultimately, we used the site map drawn by Morse as the base for our site map. When ever possible, we retained Fewkes' room numbering system.

Chapter 3

Cliff Palace Architectural Documentation Project Design

The Cliff Palace Architectural Documentation Project Design was a logical development of previous work throughout the Ancestral Puebloan area of the Southwest. This chapter summarizes the previous site documentation methods that were used and refined in our work at Cliff Palace, the locations of our work in Cliff Palace, and the rationale for the new room numbering system.

Documenting and interpreting cliff alcove architecture has been my central interest since the Sliding Rock Project in Canyon de Chelly National Monument, Arizona in 1979 (Nordby 1980). We continued to develop and refine the documentation methods at Mummy Cave, also in Canyon de Chelly National Monument, in 1990, and at Oak Tree House (5MV 523), at Mesa Verde National Park in 1994.

In our research design for Cliff Palace, we are interested in obtaining data that can be used to explain the human interactions of the people who lived in the village. We analyze the architecture and construction techniques in rooms and kivas and obtain tree-ring dates from wooden construction elements. We also assess the function and use of individual rooms, define and describe room suites, and define and describe courtyard complexes. With this information, we can interpret the observed grouping of rooms, kivas, and open areas into analytical units such as room suites and courtyard complexes.

In addition, we believe that, larger sized social units such as dual (moiety) or triadic divisions and the village proper are investigated by evaluating site layout, and overall space utilization. Many architectural changes reflect village growth.

The Rhyme and Reason: Why We Did What We Did

The method and theory that would guide architectural studies in the Southwest has languished behind other areas of archeological study (Nordby and Metzger 1991). Archaeologists often consider proper theoretical and methodological approaches to lithic or ceramic analysis in professional journals. Applications of the "type concept" abound. These contributions often are stand-alone articles uncloaked by the mantle of the archeological site report. Conversely, with respect to architecture, theoretical contributions are rare. A noteworthy exception is Lipe and Hegmon's (1989) treatment of the ways in which architecture reflects social integration in prehistoric pueblos.

Studying Masonry Architecture

Walls and other building components are the direct outcome of the behaviors and decisions of Ancestral Puebloan people. In order to guide research work in alcove sites, I developed a model to help us understand and classify these prehistoric construction components. The hierarchical model begins with observations of stone, mortar, plaster, and wood; proceeds to analysis of walls and wall segments, to rooms and room suites, to courtyard complexes and villages (Nordby 1980) (Figure 3.1). The model provides a framework in which to evaluate masonry style, examine room use and function, evaluate room suites, and describe the village unit. The model provides a basis for creating a typology of masonry architecture in an archaeological context.

While working at Mummy Cave, I developed a new analytical category, the wall sector, to further subdivide the different parts of a wall. The wall sector is a unit larger than the individual stones or mortar of which it is composed, but is potentially smaller than a wall or wall segment. A wall sector may be synonymous with a wall segment, but is likely to be only a part of it:

> Wall sectors are subdivisions of a single wall segment. This concept is designed to identify various building events within a segment. These events may be either prehistoric or modern (stabilization). For example, if most of a wall segment was built using a single technique, then only a single sector is represented. If this wall was later remodeled or stabilized, and the construction episode is recognizable, then these additional sectors must be documented separately. Thus, each wall segment may have several wall sectors, each designated by a numeral: 1, 2, etc. The key factor in definition of a particular sector is the observer's judgment; there are no hard-and-fast rules, but would include examples such as (1) stabilized parts of a wall would be a different sector from other parts; (2) chinked wall facades in an otherwise unchinked wall; (3) changes from one major construction type to another: double stone to single stone; (4) all pecked-and-ground blocks as opposed to unshaped stone (5) mortar changes, etc. [Nordby et al. 2000]

The wall sector was the primary unit used to record information at Oak Tree House. Our work at Cliff Palace has thus far been limited to defining the wall sectors graphically. Normally, this helps to identify construction of the modern era so that its characteristics will not muddy the analytical waters of Ancestral Puebloan

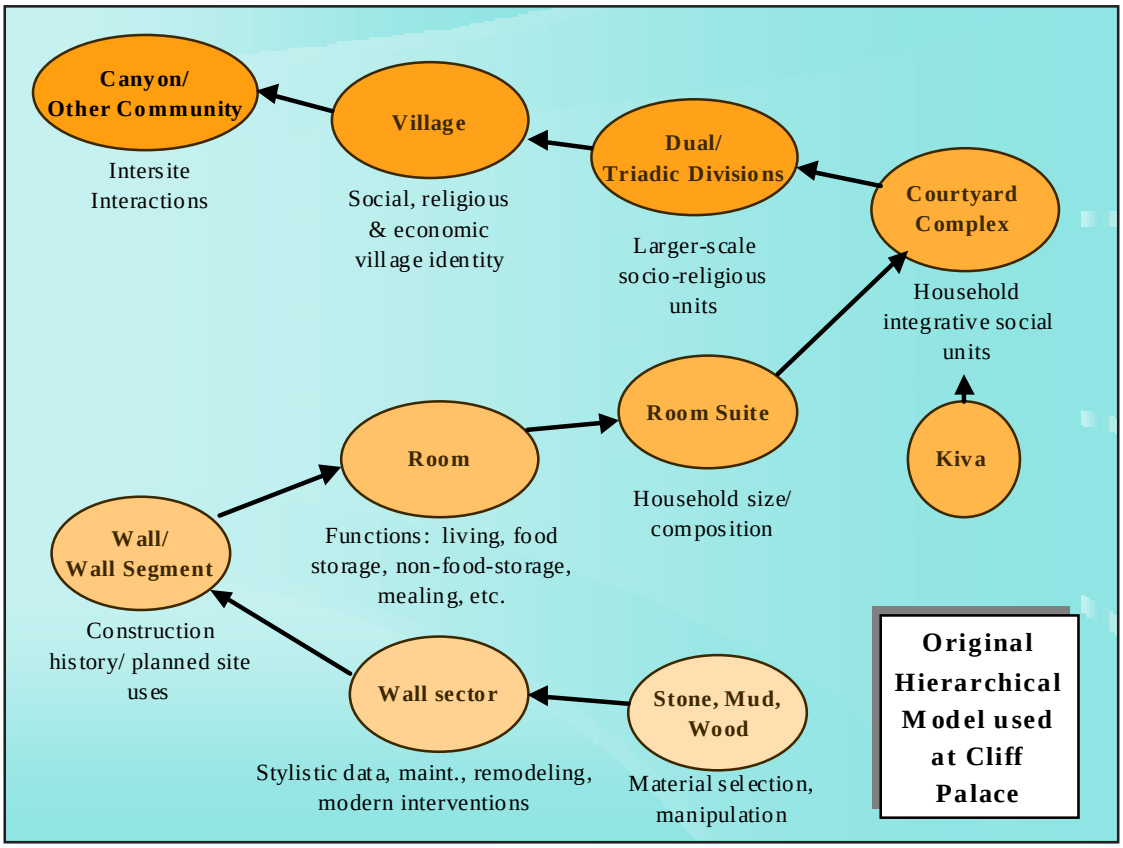

Figure 3.1. Original Hiererchical Model used at Cliff Palace.

construction techniques and choices.

In Cliff Palace we were able to gather data on some elements of the hierarchical model. We documented types of rooms, types of room suites, and types of courtyard complexes, along with graphically depicting types of individual walls and wall segments. One additional kind of architectural space that grew in importance during our work is what is simply now termed an "open area", or unenclosed space.

Activity Model for Building of Ancestral Puebloan Structures

I also developed a model that identifies and categorizes the activities and behaviors associated with procuring and processing construction stone, adobe mortar, and wood (Figure 3.2). The constructed masonry house is the result of all of these activities coming together at certain points to build walls and roofs. This model will be of future research interest at Cliff Palace.

Rooms and Room Function

Rooms in cliff alcove structures were constructed for various functions and were used in different ways. Living rooms, granaries, storage rooms, and mealing rooms can be identified in archaeological sites based upon certain features (Nordby 1980:51-65). The walls, doorways, floors, and sizes of these rooms differ from one another.

The original taxonomy of rooms used for Sliding Rock in Canyon de Chelly listed six room types: living/ habitation room, granary (foodstuff storage room), storage room for non-foodstuffs, mealing/grinding room, courtyard, and ceremonial room. Since that time, the taxonomy has been refined by separating morphological descriptive terminology from functional terminology. We eliminated the courtyard as a room type and created an "open area" category separate from room types. The kiva is also considered separately from the room types.

Courtyard, or its common euphemism, plaza, is a morphological term which obscures the functional evaluations of how those open spaces were used. Courtyard and plaza only define an open space in the same way that the unmodified term room defines an enclosed space. We know from ethnographic observations that there are many uses for open spaces. Groups of people using such spaces have differing social, ceremonial, or economic dimensions analogous to the various uses of the room types. For this reason, it seems wise to create the term open area as a morphological

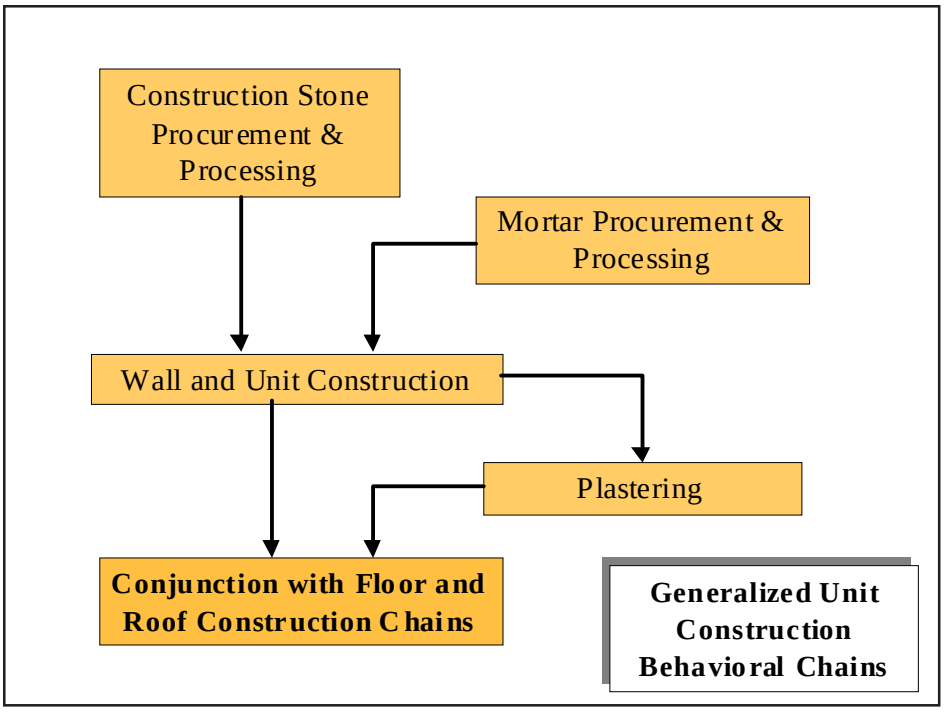

Figure 3.2. Generalized construction behavioral chains.

term, and create functional subclasses of open areas. The courtyard would be one kind of open area. A work area might be another type of open area. A work area might be used for grinding since enclosed mealing rooms are rare in Mesa Verde sites. Because of these considerations, I have separated open area and open area function from the room taxonomy that I used in previous studies.

Each of the functional architectural space classes (room types) has characteristics and attributes that differentiate it from the other classes. Since these attributes are the fundamental basis for the study at hand, material used in the Sliding Rock report is summarized below. It should be emphasized that this corpus of information was developed for a specific area in Arizona, but information from sites in Navajo National Monument and northern Arizona was also used in developing the list. At the time of the Sliding Rock project, Rohn's work on Mug House (Rohn 1971) was the sole Mesa Verdean site with specific data that pertained to our research problem, and it was included in the modeled expectations. The model was cast as a working hypothesis that might help determine room function. What follows was viewed as our beginning point for addressing room function at Mesa Verde alcove sites. Ultimately, as work progressed a variety of other features and arrays of attributes were encountered that permitted refinement of these taxa.

Living/Habitation Room (Nordby 1980:61-62)

Living rooms are those enclosed rooms used for a variety of domestic activities; including cooking, eating, sleeping, and maintenance tasks. These are sometimes called habitation rooms. Ethnographically they were also used to entertain guests and store clothing (Stevenson 1905:292), but it is not possible to prove that similar activities occurred in the A.D. 1200s. Architectural features in living rooms are summarized in Figure 3.3, in terms of walls, doorways, floors, and sizes. In Figure 3.3, an asterisk (*) denotes those characteristics that were developed in north central Arizona, and are of questionable worth for working at Mesa Verde, because their distribution is known to be limited. Related to these questions of how appropriate it is to uncritically borrow attribute sets from other cultural regions, see caveats offered by Nordby and Metzger (1991).

Fewkes (1911) also supplied an attribute that is useful for identifying living rooms. The T-shaped doorway is a feature that always links a living room with communal areas/plazas. Nordby (1980:68-69) reported a mean room size of 7.39 m^2 for living rooms at Sliding Rock, and a modal size of about 4.5 m^2, although sizes ranged from 3.6 to 19.0 m^2.

At least one living/habitation room is needed to demonstrate that a group of interconnecting rooms was a household. The largest living room number is applied to the number of the room suite.

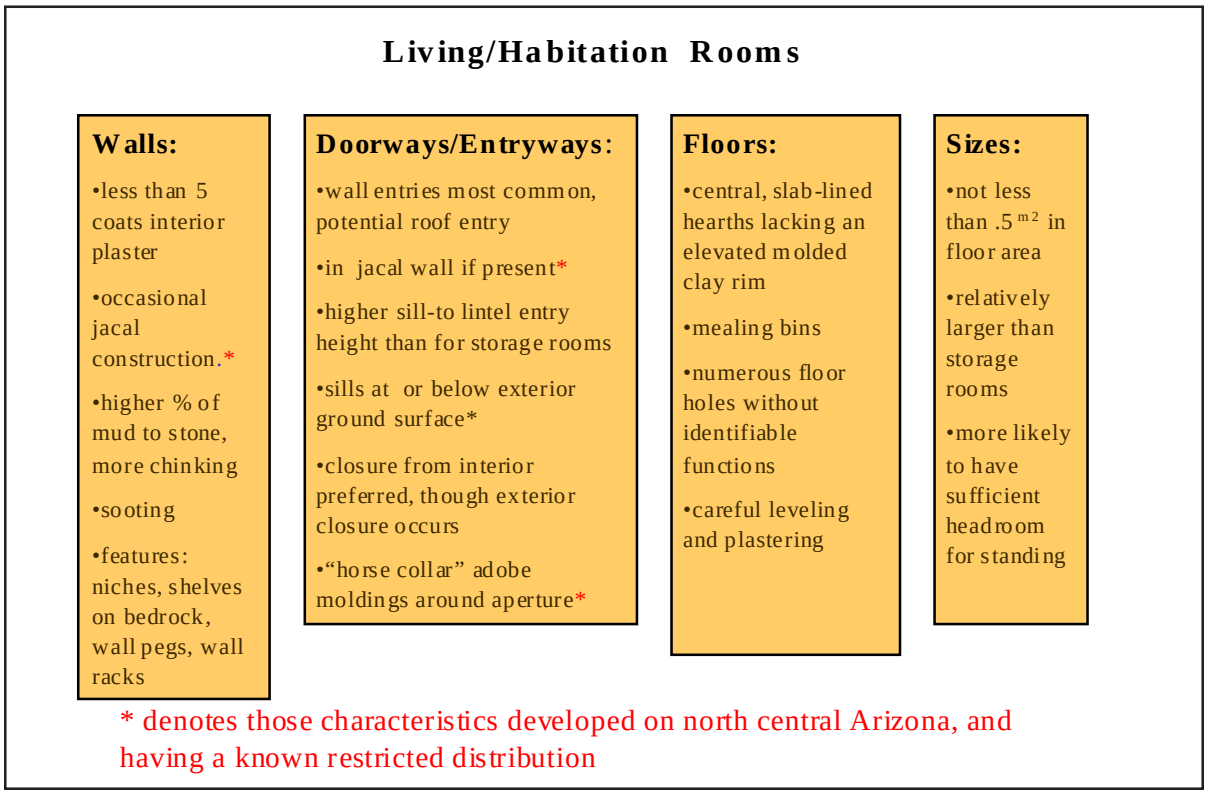

Figure 3.3. Characteristics of living/habitation rooms, extracted from previous research.

Granary (Foodstuff Storage Room) (Nordby 1980:62-63).

A granary kept food stores safe from rodents, insects, and moisture. The primary features of the granary are all associated with the need to seal these rooms from the outside. Granary characteristics are given in Figure 3.4, to which the same caveat offered previously applies.

Regarding granary size, the mean for Sliding Rock was only 1.4 m^2 (Nordby 1980:72-73). They also had irregular floor shapes with rounded corners.

It is interesting to consider these characteristics in light of differences between Canyon de Chelly alcoves and some of those at Mesa Verde. As a group, those in Arizona are now much drier. Seeps are common at the rear of larger Mesa Verde sites. This fact may lead to some differences in granary location between de Chelly and Mesa Verde sites. If alcoves are dry, perhaps the best location for granaries is at the rear of the alcove; and in fact, at least one wall in all granaries at Sliding Rock was synonymous with the alcove wall (Nordby 1980:74). Sites that are damp at the rear, such as Cliff Palace, might tend to have granaries placed away from the moisture at the back of the alcove. One suitable place might be atop small dry ledges away from the primary habitations.

For the purposes of modeling, I have assumed that granaries are household property, and contained foodstuffs that an individual household would have consumed under conditions other than duress. If this is true, then each household identified by having a living/habitation room should have at least one granary. If granary units are not connected to household spaces, then they were probably owned by some other social unit.

Storage Room: For Non-Foodstuffs

The storage room is difficult to identify. Non-foodstuff storage rooms have been defined as storage rooms without the conventional doorway sealing features of granaries (Nordby 1980:63, 75). They may also be confused with living rooms, but be identical with living rooms that lack hearths and show no evidence of sooting but have lots of storage appliances such as niches, wall pegs, etc. In theory, storage room floors would be less well developed than living rooms, and fewer episodes of plastering would be evident. Size would expectably fall between living rooms and granaries, although purely based on supposition.

The various classes of artifacts coming from each class of room would perhaps be the best way to discern between non-food storage rooms and living rooms. Unfortunately such data are currently unavailable for

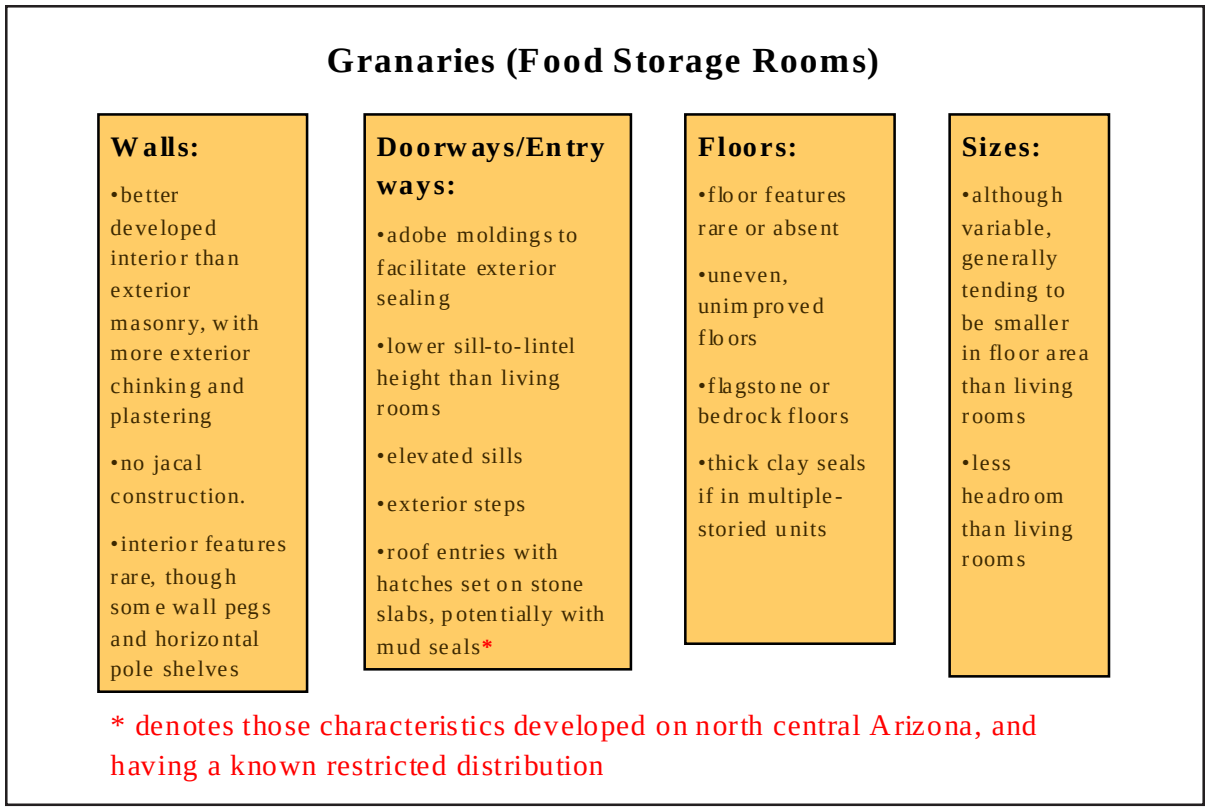

Figure 3.4. Characteristics of granaries/foodstuff storage rooms, extracted from previous research.

Cliff Palace. As will be seen, this is potentially a very important class of rooms for the Cliff Palace analysis.

At Sliding Rock, Nordby (1980:75) used location coupled with lower headroom to distinguish non-foodstuff storage rooms from living rooms. This meant that rooms built at the rear of the alcove were often classed as storage rooms, especially if headroom was low and sooting was absent. Since Sliding Rock was not excavated, we could not determine the floor levels. At Cliff Palace, rooms had been excavated. Unfortunately, the floors are now sometimes covered with debris, which obscures floor features and the character of the floor. The mean size of storage rooms at Sliding Rock was 3.33 m^2, intermediate between living rooms and granaries, although there was substantial overlap in size distribution with both other classes.

The social scale of non-food storage rooms may be variable. They might be owned by a single household or a group of households. If a single household owned a storage unit, we could expect that it would be connected to a living/habitation room. Storage rooms could also be owned or "managed" by some unit other than the household. For example, both at Sliding Rock (Nordby 1980) and at Tsegi Phase sites (Dean 1969), surface rooms were linked to kivas by elaborate painted design treatments applied to surface plasters. Generally, such rooms were located near kivas. These may represent storage rooms for ceremonial paraphernalia and might be considered as a subclass of storage room if evidence can be strengthened somewhat by finding more examples.

Mealing/Grinding Room

Mealing and grinding rooms are identified based on the presence of metate bins or mortars. In the Navajo National Monument area, such areas were either enclosed or were associated with *jacal* walls (Dean 1969). No such areas were encountered in the Cliff Palace courtyard complexes documented in this report.

It seems significant that there were so few grinding bins found at a site as large as Cliff Palace. Fewkes (1911:47) classifies Room 92 as a grinding room at Cliff Palace. There are exposed grinding bins at only two other locations throughout the site.

Kiva and Kiva Function

Kivas have been identified as circular subterranean or semisubterreanean structures, although there are exceptions. At Mesa Verde, later kiva versions tended to have a keyhole shape, with six tall pilasters. Questions about whether a structure was really a kiva generally are limited to the archeological time periods prior to A.D. 1000.

The function and use of kivas has, until the last ten years, been presented as predominantly ceremonial and frequently social, but never residential. Champion for an alternative view, Lekson (1989), suggests that kivas were frequently residential, at least on a seasonal basis. He based his suggestion, in part, on attributes such as: heavy sooting and cosmetic replasterings, which adorn many of the better-preserved kivas. Coupled with frigid winter temperatures in alcove sites (noted by the water and ice bucket brigade between December 15, 1995 and January 7, 1996), these observations deserve some investigation.

At least a part of resolving the question of using a kiva as a residence is related to whether or not alternative residential space is available and can be identified. Answering this question requires an assessment of room function, since other classes of rooms besides living/habitation rooms do not preclude kiva residency. Cliff Palace has a relatively small number of living/habitation rooms, so the use of kivas as alternative residential spaces is extremely relevant.

Open Area and Open Area Function

"Open area" is a term used to identify space that is created as a by-product of surrounding structures. Such space has been called a non-structure (Metzger 1989), and such nomenclature does serve to create an appropriate opposing term to structure (a generic term for rooms and kivas). For various reasons, I prefer the term open area. The two subclasses of open areas are courtyards (plazas) and work areas.

Courtyards (plazas) are defined as open areas located atop kiva roofs. Courtyards are larger than work areas, with well-manufactured floors and few floor or wall features. A courtyard (plaza) is an open area that was used for socio-ceremonial activity. Consequently, it is largely devoid of utilitarian features. It shares with a kiva the function of a gathering point and is usually close by the kiva. Normally, this is an area atop the roof of a kiva. Although a courtyard may have served as a place for technological pursuits, many times such activities seem to have left little evidence in the way of features. The courtyard is the hub for various other types of space. Decorative wall surfaces are expected, as are doorways to related rooms, presumably the living rooms of the group using the kiva and the courtyard above it.

The second functional type of open area is the work area. This area is probably geared more toward technological activity, even though the nature of the tasks may have produced social integration of sorts. It is expected that work areas have a variety of features such as mealing bins, axe-sharpening grooves, awl sharpening grooves, and other modifications to the bedrock when bedrock forms the floor.

Work areas can be identified by the following characteristics: no direct association with kiva rooftops, less elaborate decorative embellishment, well developed floors, which may contain bedrock appliances or other task-oriented features, and smaller sizes than plazas. In some cases, these areas may be what Fewkes termed "terraces" at Cliff Palace, and such terraces or other work areas may have been used by task units formed from the entire village. Perhaps these areas can be identified based on overall village accessibility.

It should be possible to identify functional classes for most open areas. Those open areas for which functional classification is not appropriate or possible will be termed generic open areas.

Room Suite

From the very earliest studies of architecture in the Southwest, almost everyone realized that some rooms were connected to other rooms, by either doorways or some other convention of mutual accessibility. At the same time, these room groupings were separate from others in pueblos of any size beyond a few rooms. There were differences in the degree of social integration and access (Nordby 1980:83-86).

The room suite is a term first used by Rohn (1971:31) to characterize the connections between rooms at Mug House. A room suite is the first level of room integration (Figure 3.1). Often, the rooms of a suite were constructed at the same time. Sometimes, as at Oak Tree House, existing spaces were remodeled and room function was changed. The room suite consists of at least one living room, which generally is connected by doorways or windows to other rooms in the suite. These rooms may be of any of the following types: other living rooms, granaries, non-foodstuff storage rooms, mealing rooms, work areas, or miscellaneous structures.

Normally, one would not expect a room suite to include a kiva unless it can be demonstrated that the kiva is the sole potential residential space for the group of rooms. Courtyards are also excluded, although Dean (1969:34) found that small courtyards, rather than kivas, served as the hub for single residential units.

The primary room (i.e. largest living room) in the room suite becomes the identifying room for the suite. For example, if living Room 25 was added with granary Rooms 26 and 27, the suite is known as Room Suite 25. The residential unit using a room suite is considered a household, which is normally some kind of kin-based

group, such as a family, either nuclear or extended. At this point in our research, we consider the term household to be a suitably applied term, and have attempted to define households within Cliff Palace. Each of these also has a designating number, but the household and room suite numbers are not the same.

Courtyard Complex

The Courtyard Complex is an interpretive term used to indicate the architectural evidence of a social grouping. A courtyard complex consists of room suites, a kiva, and a courtyard.

Dean first used the courtyard complex in his work on the Tsegi Phase sites:

> A larger structural unit made up of room clusters whose association is usually determined by their possession of a courtyard in common....Courtyard complexes consist of two or more room clusters grouped around a single courtyard...[Dean 1969:34-35].

Two factors should be mentioned with respect to our definition of courtyard complex. First, to conform to what has been done at Sliding Rock (Nordby 1980:102), Mummy Cave, or Oak Tree House, as well as Cliff Palace; we use Rohn's (1971) more specific term "suite" for the less specific "cluster." Second, Dean allows room suites to be associated with related (household) courtyards, an application which is appropriate for the Tsegi Phase sites. Although there were few, if any, small open areas seemingly related only to household use at Oak Tree House, there seem to be a number at Cliff Palace. As analysis proceeds, we will know how common this practice was in the Mesa Verde area.

Cliff Palace Documentation: What We Did

Our documentation work at Cliff Palace focused on rooms, which were being damaged by water. We did our most detailed work in the area of Kiva J and Kiva M. We broadened our documentation work to provide the context for our research. We assigned a unique provenience number (unit designation) to each structure and open area in Cliff Palace so that we could track data independently in an electronic database. We used photographic images to record the condition of walls and stored the information in computer files. In some cases, selected data were collected at a less intensive level in areas further from the water damage in the site.

Documentation was reduced from the more integrative Oak Tree House approach by placing an increased reliance upon graphics: developing wall elevations, using drawings, making necessary measurements, and intensive photography.

Unit Designations: Numbering the Rooms

We used the Morse ground plan when possible and the Fewkes room and kiva numbering system. Fewkes' system has 95 rooms, but Markley's photos and Morse's map depict a Room 96 at the north end of the site. Nordenskiold numbered several slab structures at the rear of the site to make the room count over 100, but nobody else seems to have used those designations. Since 1935, no additional room numbers have been added by stabilization crews. Furthermore, no one numbered the rooms on the ledge except for Copeland and Ives (1973). They prepared a sketch map on which they assigned numbers 1-9 which had already been used in the lower portion of the site. With all these various numbering systems, it was clear that we needed a new numbering system for our work. Appendix A provides a correlation table for these various numbering systems used at Cliff Palace.

We used the following terminology and "rules" to designate unique numbers for the rooms at Cliff Palace:

1. For a ground floor room with additional stories above it, each story must have its own designating number. This is the only way to independently track data through an electronic database.

Room 22 supplies an example. The adjacent room is Room 23. Both are listed as having two stories. A close study of architectural details in the two rooms, especially the sloping rear wall of the alcove, indicates that Room 23 in fact does not have two stories. The valid second story of Room 22 extends partway into what has previously been viewed as Room 23's second story. Just describing this situation is confusing. If one considers that the second story of Room 22 has a different floor area from the first story of Room 22, and that floor area is a critical variable in assigning the room function, then a single room number would make interpretation difficult.

2. Subscripts or suffixes are normally used to identify the story level of an architectural space. For example, the suffix (1) following a room number or open area indicates that the unit is the first story of a two-story unit. For example, Room 22 (1) is the first story of a two story unit, and the second story of a two story unit is designated as Room 98 (2). Architectural spaces with no stories above them usually are presented with no suffix. Room 25 has no second story above it.

3. Generally, for an architectural space to be considered a "room" (or a kiva), sufficient evidence must still exist

to demonstrate closure on all sides, and that a roof probably once existed. In some cases, when the alcove ceiling articulates with the walls, it is considered to have served as a roof.

4. If an architectural space lacks either complete closure or a roof, it is considered an "open area." This term has been used to supplant the term non-structure (Metzger 1989), but is essentially any space that resulted as a by-product of adjacent buildings. Although it may at first glance seem synonymous with the concept of courtyard or plaza, open areas are not. Rather, open area is an umbrella term that is strictly morphological, not functional. The terms courtyard or plaza are burdened with functional interpretations from many decades of use. Open areas include the functional interpretations of courtyard, but also might include terraces used as work areas. Such spaces are common at Cliff Palace.

A number of what other researchers have called rooms also fail to meet the definition because there is no evidence that they were enclosed or roofed. Pertinent examples are the second stories above Room 29, or the area west of Room 21. In spite of Fewkes' assertions, both these units lack evidence for either a roof or enclosure. Since we would impute different architectural meaning to these kinds of spaces, they are included as open areas. The area above Room 29 seems to be a rooftop porch overlooking the rooftop plaza above Kiva J.

Room exteriors that are parts of open area facades are generally discussed and filed under the open area provenience rather than with the room interiors. The open areas themselves are designated with a letter when they are above kivas. If open areas are located on rooftops or elsewhere, they are designated with a number.

5. All constructs must have a unique designator, in order to supply information to an electronic database. For rooms or kivas, this is a simple matter, since the unit designation is unique. For such structures as retaining walls, each must be assigned a number. "Miscellaneous Structure," with a numerical designator, is the term selected for these entities. An example from the units studied recently would include the wall that helps define the southwest side of Open Area J. Since the structure does not enclose an area, but serves as a parapet wall, it is classified as a miscellaneous structure.

In our project, we wanted to account for all construction. We had to assign new numbers to second story rooms, open areas, and miscellaneous structures. The first new room number applied during the project was Room 97 (2), which was assigned to the space above Room 21. During the documentation, a new kiva (Kiva X) was also designated. This structure was shown on the Morse map and the 1965 map, but for some reason was never added to Fewkes' original numbering sequence.

We also assigned numbers to the ledge rooms. A measured sketch map was made when the rooms were inspected for the presence of moisture in December 1995, and a more detailed map was subsequently made. These rooms had never been numbered in a way that articulated with the rest of the site; nor had any map comparable to the one for the lower rooms ever been discovered. This report includes some information on the proxemics on the ledge. One cannot help but note that the various colors of plaster on the interior of the ledge rooms suggest a somewhat more elaborate appellation than simply "storage rooms", a point made by Gay Ives on numerous occasions. These units should be rapidly integrated into any studies of Cliff Palace architecture, rather than going largely undocumented because of low accessibility or some notion that they should remain pristine and therefore undocumented.

Documentation Techniques

When work commenced in response to water entry into the rear of Cliff Palace, the approach used at Oak Tree House was compressed and a strategy centered on graphics was developed. Two kinds of photography were used and wall elevations were prepared as an "annotation palette." Information on wall condition, past stabilization episodes, and designators for such features as niches and wall pegs were added to the map. Wall sectors were delineated for each wall and marked on the individual drawings. The Level 1 form documentation package that was completed for Oak Tree House units was ultimately retooled as an electronic program, ArkDoc (Nordby et al. 1998), and paper forms completed, with data later entered into the computer.

The initial step in the photography was to position targets onto the wall surfaces to be documented graphically. Photographs were then taken, with the intention of loading the images onto CD ROM discs for computer manipulation using Photomodeler software, such that additional measurements of these wall facades could be made directly from the images. In addition, this approach could lead to rapid inspection and sorting of the images via computer searches using other kinds of software, especially Kodak Corporation's Shoebox and Picture Publisher software. This technique works well for kivas and large open areas, but is all but useless in small rooms because not enough targets can be captured with any single frame to utilize Photomodeler. This is especially true of rooms in the rear of the alcove, which are generally small and dark. Unfortunately, there were so many of the latter cases that we developed a back-up technique for recording.

The alternative to the computer photography was to use normal photography. Additional 35 mm color print or slide images were taken to augment wall elevation drawings in which target positions were recorded. For these photographs, a 1^{m2} grid with 10 cm internal increments was built and used. The objective for this work was to document each square meter of wall facade in detail, supplementing photographic work done in larger areas. In some cases, rooms are too small to utilize color slide photography and the graphic component had to be developed by hand drawings.

As the photography progressed, wall elevation drawings showing basic outline, major features, and target positions were prepared. Even in those rooms that were too small for photography using Photomodeler manipulation, the targets, when used with the grid, aided in rectifying the color print photographs. Details recorded on such photos were added to the wall elevation drawings later in the laboratory and drafting room. These drawings were used for the graphic component of the work, since the photographs themselves required too much disk space for storage. The drawings could be scanned and stored as GIF files at about 10% of the space of a compressed TIF file format.

Work Locations and Architectural Spaces Studied

Damage to Cliff Palace was most acute in the Kiva J and Kiva M areas. They were the main areas studied in this project. Some moisture was seeping into other kivas, most notably Kivas C and E. Behind Kiva J, Rooms 26, 27, and 28(1) were under assault from heavy water seepage from alcove pore spaces. It was difficult to capture this water using buckets, because walls were contiguous with the ceiling and seepage ran directly into the wall tops or ends. Ceiling drips also entered Rooms 26, 28(1) and Kiva J. This water was captured by buckets when possible.

Rooms behind Kiva M were suffering the greatest impact, and moisture on the kiva walls produced dampness, carbonate deposition, and stone softening. Moisture entry in this area is probably a chronic condition since mossy vegetation forming on the floor west of Rooms 41 and 42 indicates a substantial amount of ambient moisture. The walls newly impacted by the increased moisture included the south wall of Room 49(1)(synonymous with the north wall of Room 44(1)), and the west wall of Room 45(1)(the east wall of Room 44(1)). In particular, the floors of Rooms 43, 44(1), 45(1), and 49(1) were very wet from seepage. In addition, ceiling drips were active in Room 46, atop the south wall of Room 45, and onto the low retaining wall (Miscellaneous Structure 3), where the moss was growing. Moisture striking Open Area 6, above Miscellaneous Structure 3 was moving through the northeast corner of Room 40(1), removing a small section of wall mortar and dampening the stone. Adjacent Rooms 39(1), 41, 42, and 48(1) were also studied because they were part of an archeological and architectural unit.

We applied our documentation methods to the small portion of Cliff Palace that was affected by the water damage. Throughout the site, we assigned new room and kiva designations and added the categories of miscellaneous structures and open areas. We used the courtyard complex (a kiva, rooms, open areas and miscellaneous structures) to organize our interpretation and discussion. In addition, we documented several other units because moisture became a problem as time passed. The remainder of this report either presents the data that were collected on those parts of the site that were damaged, or summarizes data that were collected at other parts of Cliff Palace in order to better create the context for evaluating the architectural spaces studied.

The succeeding chapters describe Courtyard Complexes J and M and provide new data on the Ledge Complex. The final chapter presents our interpretation of what Cliff Palace represents in terms of architectural space and proxemics, modifies the original model, and supplies some potentially fruitful avenues for research at Cliff Palace.

Chapter 4

Courtyard Complex J

Courtyard Complex J (Figures 4.1, 4.2 and 4.3) consists of 17 architectural spaces and structures in Cliff Palace built sometime between A.D. 1260 and 1278, but most intensively between A.D. 1271. Each space has its own history of excavation and preservation. As a result of our field work we can also describe the construction of the walls and floors and suggest how each room was used. In this chapter, each room on the first story level is described followed by its second story counterpart. Open Area J is discussed last because it has the most complex architectural history. The discussion of Open Area J summarizes the history of construction and use of the entire courtyard complex.

The architectural units comprising Courtyard Complex J, their use, and time of construction are:

Room 21(1), living room, A.D.1275-1278

Room 97(2), storage room, A.D. 1275-1278

Room 22(1), storage room, A.D. 1275-1278

Room 98(2), indeterminate, A.D. 1275-1278

Room 23(1) (Room 98(2) is partially above this unit), living room, A.D. 1275-1278

Room 25, (early granary) converted to living room, A.D. 1260-1270

Room 26, (early granary) converted to living room, A.D. 1260-1270

Room 27, (early granary) converted to living room, A.D. 1260-1270

Room 28(1), storage room, A.D. 1272-1273

Room 99 (2), storage room, A.D. 1272-1273

Room 29(1), storage room, A.D. 1271-1272

Open Area 4(2) (above Room 29), indeterminate open area, A.D. 1272-1273

Kiva X, ceremonial space, seasonal living room, much earlier than A.D. 1271

Kiva J, ceremonial space, seasonal living room, A.D. 1271

Open Area J, social gathering area, A.D. 1271

Miscellaneous Structure 1, parapet wall, A.D. 1275-1278

Miscellaneous Structure 2, footing wall, A.D. 1275-1278

Figure 4.1. Overview photograph of Courtyard Complex J

Table 4.1. Key to annotations used in Plan Views and elevations.

Feature Code	Feature Type
AG	Awl Grooves
AP	Ash Pit
BE	Bench
CS	Cist/Storage Bin
DE	Deflector
DS	Doorstep
EB	Entry Box
GS	Grinding Slick
H	Hearth
LA	Loom Anchors
LDR	Ladder Holes
LH	Loop Hole
LP	Loop
MB	Mealing Bin
NC	Niche
OC	Other Constructed Wall Feature
OF	Other Floor Feature
OM	Other Misc. Feature
OO	Other Opening
PA	Flagstone/Paving

Feature Codes	Feature Type
PET	Petroglyph
PH	Peg Hole
PI	Pilaster
PIC	Pictograph
PL	Platform
PR	Pot Rest
PS	Post Hole
PT	Pit (not further specified)
PW	Partition Wall
RA	Rack
RC	Recess
RE	Roof Entryway
S	Sipapu
SH	Shelf
SK-P	Primary Socket
SK-G	Generic Socket
SK-S	Secondary Socket
ST	Step Stone
TH	Toehold
VN	Ventilation port
VS	Ventilator Shaft

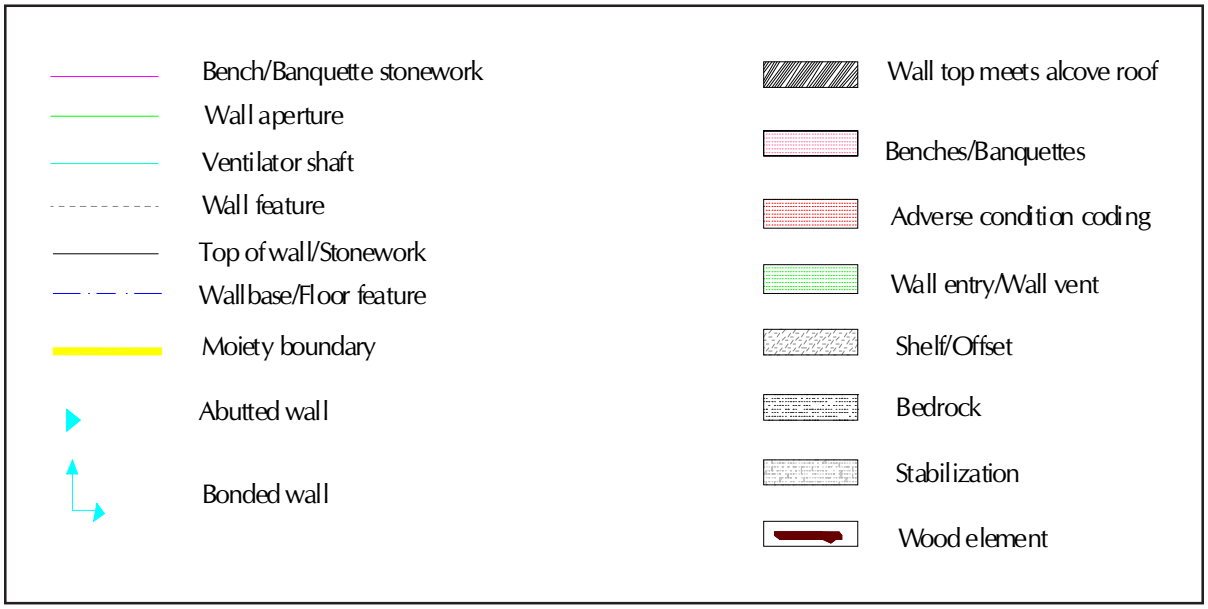

Figure 4.2. Line and hachure key for Plan Views and Elevations.

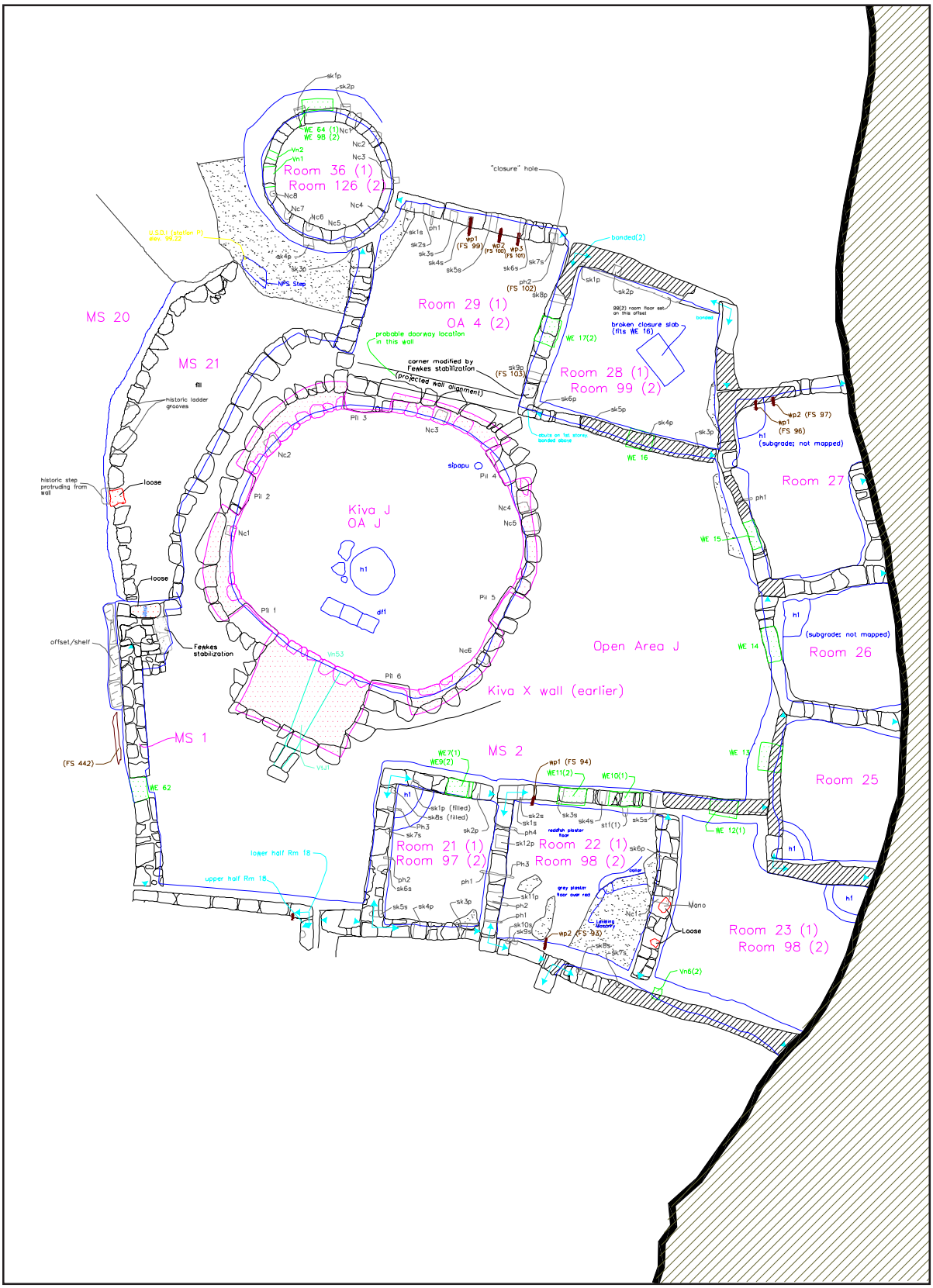

Figure 4.3. Map of units comprising Courtyard Complex J.

Room 21(1)

Excavation and Preservation History

Room 21(1) is a rectangular room in the southern portion of Courtyard Complex J. In the first map of Cliff Palace, drafted by Nordenskiold, it was labeled Room 83 (1893:facing page 60). Nordenskiold commented that it was among those rooms in excellent condition.

Fewkes excavated Room 21(1) (Figure 4.4). He made no comment about the room, other than that it had a fireplace in one corner (Fewkes 1911:43). The fireplace is in the northwest corner on Morse's map. Additionally, Fewkes indicated on his map that Room 21(1) was two stories high. We designated the second story as Room 97(2).

Fewkes added a patch in the west wall to fill a weak place in the lower portion of the wall. The patch consists of a 50 cm^2 area of highly organic mortar, applied with a trowel. Since the mortar completely covers the stones, no attributes on stones were visible. The surface finish is well smoothed. In addition to this lower repair, a number of the roofing sockets in Room 21 (1) were filled with mortar during the modern era, probably by Fewkes' crews. Generally, these are in the north and west walls.

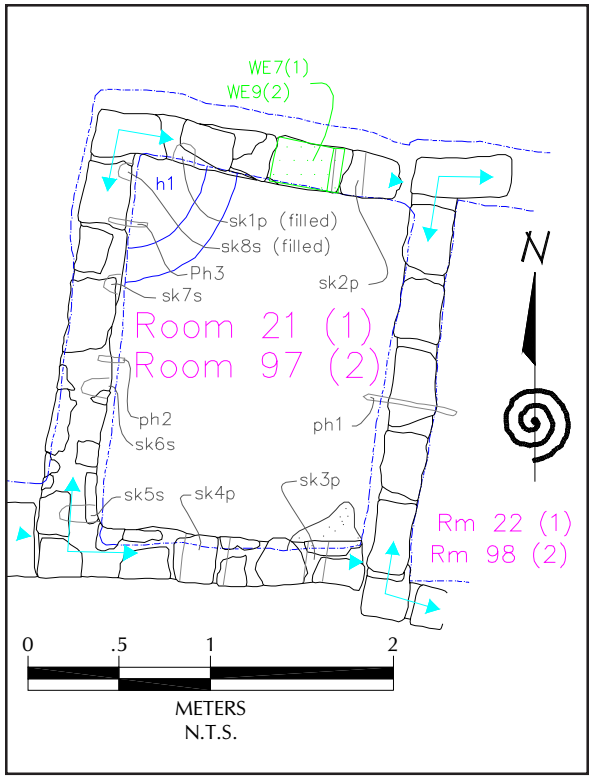

Figure 4.4. Plan View of Rooms 21(1) and 97(2).

Room 21(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 21(1) is a relatively small unit that was added (with Room 97(2)), to the exterior of Rooms 22(1) and 98(2). We redrew Morse's map, with some modifications. A number of wall features, generally primary and secondary roof support sockets, are indicated on his map, as well as the hearth in the northwestern corner. Other wall sub-features and details include peg holes in the east and west walls, and a dado (a band of plaster and/or wash on the lower third or half of a wall that is finished differently from the rest of the wall) 75-80 cm high on all walls except the northern one. The wall entry (doorway) is in the north wall. There is also a recessed toehold 48 cm below the wall entry. Overall dimensions of Room 21 are:

Length and axis: 1.93 m N-S

Width and axis: 1.49 m E-W

Roofed floor area: 2.88 m^2

Headroom: 1.77 m

Walls

The north, south, and west walls of Room 21(1) generally consist of irregularly shaped stones, some of which have been pecked, but most of which are unshaped. The north wall does not have any plaster, but the remaining walls each have a pink (7.5YR7/4) dado about 75 cm high that ends about 25 cm from the north wall.

The east wall also has the same dado, but most of this wall is composed of rectangular, blocky stone, with some tabular pieces interspersed. Almost all of this stone has been shaped by pecking. The east wall facade would originally have been the exterior wall of Room 22(1). About 70 % of the visible horizontal joints have been chinked with small tabular spalls.

Floor

We swept the floor of Room 21(1) in search of additional floor sub-features. There were no pits other than the collared hearth in the northwest corner. The floor was constructed of puddled adobe, over bedrock, which outcrops along the south wall. This surface is probably original.

Condition

Room 21(1) is in stable condition, and has no active deteriorating agents. Even the dado is stable.

Room 21(1) Architectural Context: History of Construction and Use

Room 21(1), along with Room 97(2), was added to the exterior of Rooms 22(1) and 98(2). The finished nature of what would have been the exterior wall of Room 22(1) indicates that Room 21(1) was not planned when Room 22(1) was built.

Room 21(1) was built after Open Area J, Open Area E, Kiva E, and Kiva J. The small size of Room 21(1) preserved access between Open Area J and Open Area E or Kiva E. Kiva J was built in A.D. 1271 and Kiva E was probably built between A.D. 1273 and 1278. Room 21(1) and the room above it were probably constructed between A.D. 1275 and 1278.

The collared hearth in the northwest corner indicates that Room 21(1) was used as a living room where people cooked food. Three of the walls have a plastered dado, and the room has several wall pegs. There was a toehold in the interior below the door (Wall Entry 7) to facilitate exiting the room. The relatively large height of the wall entry is indicated by the Height-Width Index (HWI) of 179.02. The wall entry also closed from the exterior. These features are often found in living rooms at Cliff Palace.

Room 97(2)

Excavation and Preservation History

Room 97(2) was renumbered as part of our project. It is the room above Room 21(1) (Figure 4.4). Chandler's (1989:23) notes provide the stabilization history under her section on Room 21(1).

> The site plan view map prepared in 1934 (Morse 1934g) shows that the north wall was capped with stone, which presumably represents Fewkes' work. Original masonry is indicated in all four walls. An opening at the east end of the north wall is circled in red on the map, suggesting that this area may have been stabilized in 1934 by Morris' stabilization crew. There is no documentation of such work, however [Chandler 1989:23].

We think that the stone capping on the north wall of Room 97(2) is original, not the work of Fewkes. We also think that the opening circled in red simply indicates a door (wall entry) to Room 97(2). This entryway links Room 97(2) with Open Area J, and may have opened onto a rooftop of a now fallen room.

We determined that the capping along the north wall of Room 97(2) is probably original because of the plaster application and the construction technique. The first question we tried to answer with our observations was whether some of the dado plaster applied to the entire room was from modern stabilization. The practice of plastering the walls as part of preservation work does occur at Mesa Verde alcove sites, but only infrequently. In the case of Room 97(2), the other walls have plaster details that indicate that their tops are all original. Plaster along the north wall of Room 97(2) overlies the mortar joint at the bottom stone on the left doorjamb and all others in that course. Unless the stabilization crew also plastered, this course is original. Work above that point has no plaster on the wall interior, and could be an addition, but if so, the mortar match is exceptional with the remainder of the room's masonry (which is probably original).

The second question we tried to address was why none of the joints for the upper portion of the north wall in Room 97(2) had the characteristic chinking of the original work. We examined old photographs of other areas of Cliff Palace and found that the lack of chinking was found elsewhere. Room 124(2), above Room 18(1), does have the same stylistic treatment and is of original construction. Room 124(2) also contains two visually striking ventilation ports/windows in the west wall that clearly identify the unit. That the stylistic chinking treatment is original is clearly depicted in pre-excavation photography of Cliff Palace.

The stabilization work to the opening in the east wall, annotated in red on the Morse map, probably refers to the replacement of a single jamb stone and the sill. Consequently, it is likely that the doorway was originally in the same position that it is now, even if embellished during the modern era. Our conclusion, based on inspection in the field, is that the upper north wall of Room 97(2) is probably original.

Room 97(2) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 97(2) shares the floor plan of Room 21(1) and thus has the following dimensions:

Length and axis: 1.93 m N-S

Width and axis: 1.49 m E-W

Roofed floor area: 2.88 m^2

Headroom: undetermined

All four walls in Room 97(2) room have been plastered as high as they remain in position, with the exception of the north wall. This plastering took place up above the height of the doorsill, and obscures the stone work on all walls. Single stone construction was used throughout all walls.

Walls

The walls of Room 97(2) were generally made from large blocks that were shaped with bifacial flaking techniques. Mortar extrusions cover much of this rough facade on the interior of the room, and chinking stones are absent. The narrow sill stone was shaped by bidirectional edge chipping, and the remaining jamb stones are ground.

The lower part of the north wall, and the remaining three walls of this unit were plastered. The first coat was applied as a finish coat to all but the north wall in a reddish yellow color (5YR6/6). Later, a finished homogeneous pink (7.5YR 7/3) dado was added to all walls, including the north one.

Condition

Room 97(2) is in entirely stable condition.

Room 97(2) Architectural Context: History of Construction and Use

Room 97(2) and the unit below it (Room 21(1)) were added together to the exterior of Rooms 23(1) and 98(2). The construction design of the rooms preserved the access to Kiva E and Open Area E from Open Area J. Rooms 18(1) and 124(2) may have been added at the same time. Later, Room 19(1) was built between Room 21(1) and Room 124(2), and access to Open Area E was rerouted. We think that Room 97(2) was built between A.D. 1275 and A.D. 1278.

We think that Room 97(2) may have been a storage room but view the overall level of information as inconclusive. That the doorway was sealed from the exterior is the main indication of the function of Room 97(2). There is also evidence of two plastering efforts. Room 97(2) had four walls but there is no evidence of a roof. Existing walls do not contain any roofing sockets, but perhaps do not stand high enough for them to have been preserved.

Room 22(1)

Excavation and Preservation History

Room 22(1) (Figure 4.5) was first mapped by Nordenskiold, who referred to it as Room 81 (Nordenskiold 1893 facing page 60). Room 22(1) was excavated by Fewkes, who designated it Room 22 (Fewkes 1911:43), and noted that there was a stepping stone projecting from beneath the doorway. The Morse map shows that this room had two exposures of bedrock on the floor, with the largest in the southeast corner.

Capping, perhaps done by Fewkes (Chandler 1989:24), is limited to the central east wall. Fewkes may also have capped some of the north wall.

Room 22(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 22(1) is part of a large quadrilateral space that was added to the exterior of Room 20. It was part of a three-room unit (Rooms 22(1), 23(1), and 98(2)). Only the south wall of Room 22(1) is plastered. Dimensions of Room 22(1) are:

Length and axis: 2.22 m E-W

Width and axis: 2.14 m N-S

Roofed floor area: 4.75 m^2

Maximum headroom: 1.90 m

Minimum headroom: 1.80 m

Walls

The walls of Room 22(1) were added to the exterior north side of Rooms 20(1) and 125(2) in three major construction episodes. The first construction episode was the South Wall, Sector 1: placed against the exterior of Rooms 20(1) and 125(2). The second construction episode was the South Wall, Sector 2: West Wall, and North Wall, added as a single contiguous wall. The third construction episode was the East Wall, Sector 1, a partition wall separating Rooms 22(1) and 23(1).

South Wall, Sector 1. This sector is the exterior of the north wall of Room 20. Occasional stones protrude through the exfoliating plaster of this unit, which was built using the single stone technique. Plaster color is pink (7.5YR 7/4) and it is of extruded smoothed origins. Occasionally, bits and pieces of other plaster colors are

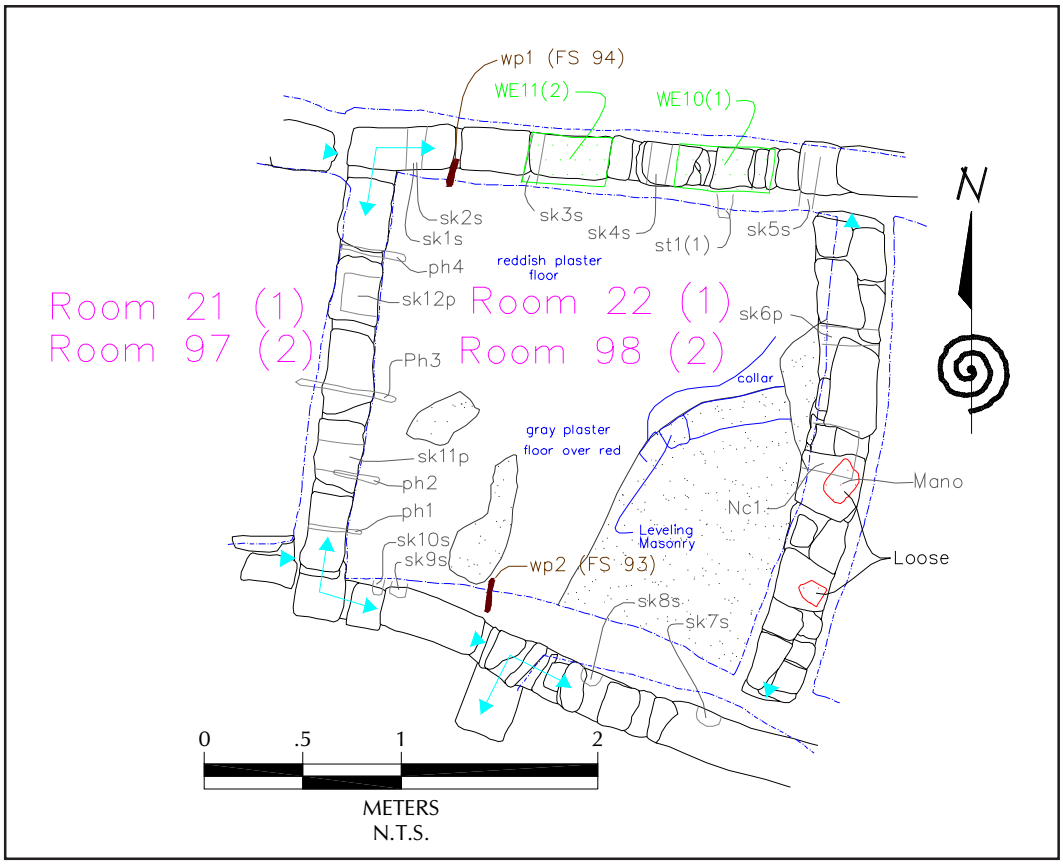

Figure 4.5. Plan View of Room 22(1) and west portion of Room 98(2).

visible, but not enough remains to be certain of the color.

The remainder of the south wall, the west, and the north walls are a single wall sector built of single stone construction. Stones are blocky, and often the extruded mortar obscures the overall block shape. None of these walls has been plastered. The masonry is generally semicoursed, and stone shaping is limited to edge and facial chipping.

East Wall, Sector 1. This entire wall is only a single sector, although the upper course may have been repointed in place by Fewkes (Chandler 1989:24). Most of the stone shape is blocky, although there are numerous lenticular stones. There are four or five sooted or burned stones scattered throughout the wall that have apparently been recycled from elsewhere.

Floor

Room 22(1) has the remnant of an original floor still in position. There were no sub-features on the floor. Bedrock, some of which slopes more than the usual, outcrops along the eastern wall. Some of the bedrock is lightly burned. We think this is related to activities on the surface before the room was enclosed.

Condition

Room 22(1) is in excellent condition overall, with no major problems. However, there is some plaster exfoliation along the south wall, Sector 1. This problem is actually tied to similar, but more advanced problems along the south wall of Rooms 23(1) and 98(2), and is discussed in detail in the sections describing those units. In addition, there is a settlement crack above socket sk4s, in the north wall of Room 22(1). This should be monitored to determine if movement is occurring, although we think this crack is ancient and dates to the time when the roof of Room 22(1) collapsed or was pulled off the unit. If Room 22(1) was ever stabilized, it probably involved repointing the east wall in place.

Room 22(1) Architectural Context: History of Construction and Use

Room 22(1) was added as part of a three-room unit, with Rooms 23(1) and 98(2) sometime between A.D. 1275 and 1278. We think that the addition containing these three rooms was probably added slightly after Kiva J. The two ground floor units were added as a single large living room between the exterior of Room 25 and Room 20(1). The large room was then subdivided by adding the east wall of Room 22(1).

The south wall of Room 22(1) is abutted to the north wall of Room 20 and was built after Room 20. Room 20 had two disparate tree-ring cutting dates of A.D. 1240r (Robinson and Harrill 1974: 53) and A.D. 1274. Rooms 20(1) and 125(2) were probably built in A.D. 1274 because of Kiva E construction dates. Rooms 25, 26, and 27 were probably built much earlier because of their association with Kiva X.

We think that Room 22(1) was a primarily a storage room. It contains the following features: a niche, a doorway that sealed from the outside but had a doorstep below it on either side, at least two and perhaps as many as six wall pegs, or perhaps a wooden or wickerwork shelf/rack. Although there was no hearth, Room 22(1) may have been also used as a living room with its large floor area (4.75 m^2) and tall doorway (HWI 166.23)

Room 98(2)

Excavation and Preservation History

Room 98(2) is a new designation for the second story above Rooms 22(1) and 23(1) (Figures 4.5 and 4.6). It was, excavated by Fewkes in 1909. The room is essentially of quadrilateral shape, and the Morse map shows wall sub-features: Wall Entry 11 in the north wall, and two niches, one each in the north and south walls.

We do not think that Room 98(2) was stabilized. According to Chandler's (1989:24) inventory, capwork was applied along the upper north wall by Fewkes but as discussed in the section on Room 97(2), we think this capping is original. Chandler also notes an area at the west end of the north wall of Room 98(2) which was circled in red, suggesting that perhaps it denotes work done by Morris' crew in 1934. This area appears now to have been an entryway, which probably would have been referred to in Lancaster's journals if stabilized. We believe that the red markings only were made later to mark a second story doorway that Morse missed. On both sides of the north wall, there is plaster, suggesting that the existing stonework is original, although the character of the plasterwork is somewhat unusual in color and texture.

Room 98(2) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 98(2) spans the cross wall between Rooms 22(1) and 23(1) below, and was actually larger than either of the rooms below it. There is no direct evidence that the room was ever roofed, although it seems likely. It is a quadrilateral in floor plan with the following dimensions:

Length and axis: 3.35 m E-W

Width and axis: 2.14 m N-S

Roofed floor area: 7.17 m^2

Headroom: 2.50 m

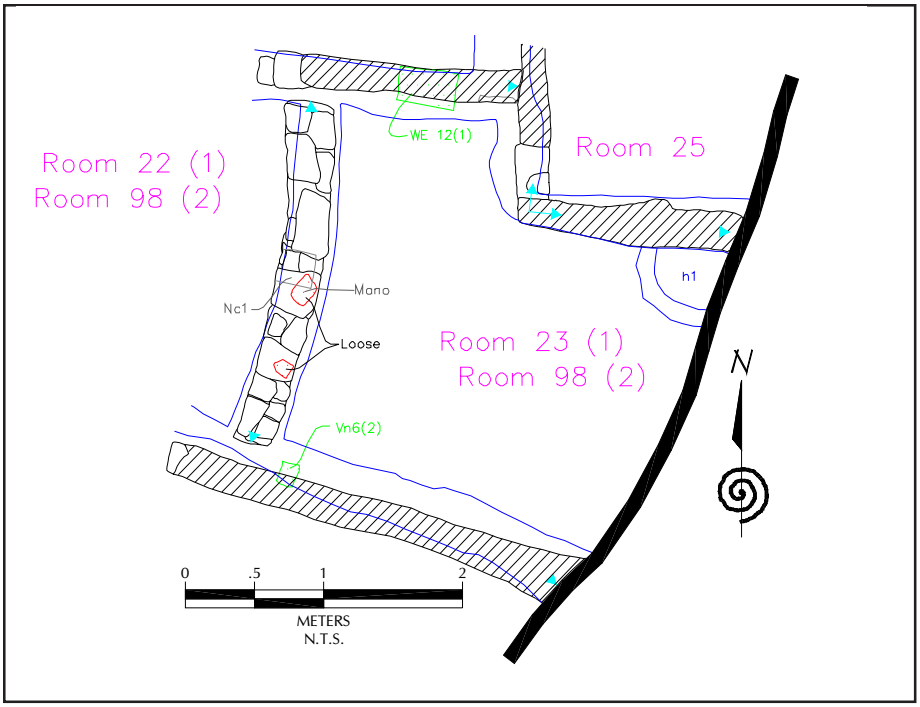

Figure 4.6. Plan View of Room 23(1) and eastern portion of Room 98(2).

Walls

Room 98(2) was built along with Rooms 22(1) and 23(1) below it, and was added to the outside of Rooms 20(1) and 125(2). The south wall was once the exterior facade of the earlier units. The north and west walls, and Sector 2 of the south wall, are all of contemporaneous construction, and share characteristics. The east wall is formed of the alcove face.

South Wall, Sector 1. This sector is the exterior of the north wall of Room 125(2), and was entirely plastered, first with a roughcast pink (7.5YR 7/3) full-wall scheme, and then with a thin applied plaster coat of white (10YR 8/2). Stones occasionally protrude through this plaster, and plaster exfoliation is worst along the juncture with the alcove wall. Such stones as are visible are large blocks, frequently pecked, in keeping with external construction of multistoried buildings.

North, East, West Walls

The remaining constructed walls are formed of large, pecked blocks. Plaster is an extruded smooth pink (7.5YR 7/4) full wall scheme. The alcove face is also plastered within this room. Some kind of construct appears to have been abutted against the north facade, but what it was remains unknown.

Condition

The major problems associated with Room 98(2) include moisture and bird excrement damage to the plaster. During the winter of 1995-6, there was an area of dampness 0.25 m^2 covering the plaster at the juncture of the wall and the alcove wall. Plaster was exfoliating in this area. Overall, the affected area is adjacent to the alcove face, and is about 1.5 m high and a single stone wide (0.35 m^2). The alcove wall in this location is pitted with small solution cavities from moisture moving through the stone.

In addition, there are trails of bird excrement across the face of the plastered southern wall, even though no birds were observed there during the project. Avian activities atop this wall are limited to perching, as opposed to nesting. It is unknown how the droppings impact the chemistry or adhesion properties of the plaster in the room, but the result is unsightly, at minimum.

There is a more serious condition that could result in major structural damage and wall loss. A scale/slab is forming along the alcove at the upper part of the southern wall. If this slab continues to develop, it could ultimately separate from the alcove ceiling and come crashing into the room, taking a portion of the south wall with it. It is estimated that this scale/slab weighs between 100 and 200 kg, so major damage could ensue.

Room 98(2) Architectural Context: History of Construction and Use

Room 98(2) was built between A.D. 1275 and 1278 as part of the three-room addition comprising the southern wing of Open Area J, and is the only second story room in the group. It was built after Rooms 20(1) and 25, but before Rooms 21(1) and 97(2). Room 98(2) was entered from Open Area J, which accrued its final form by A.D. 1275-1278.

There is not enough data to determine the function of Room 98(2). The room has no evidence of sooting, nor any oxidation plumes. Plaster details on the exterior wall indicate that a balcony ran beneath the entryway, supplying access. The doorway closed from the exterior.

Room 23(1)

Excavation and Preservation History

Room 23(1) was first designated and mapped as Room 80 by Nordenskiold (1893: facing page 60). It was later excavated by Fewkes (1911:43), who simply noted that it had a fireplace in one corner. Although Nordenskiold depicts the room properly, Fewkes' ground plan makes a slight error in depicting this room, showing the east wall as masonry, and changing the room's size and shape. Actually, the room is L-shaped as shown in Morse's map, with the hearth built against the alcove wall at the northern end of the east wall (Figure 4.6).

Chandler (1989:25) indicates that Room 23(1) retains original masonry on north, west, and south walls, which is confirmed by our field observations. She also noted capping installed by Fewkes is along the west wall, which only extended from the floor level to the roof level of this room, probably to help support the floor for Room 98(2). In the discussion of Room 22(1), we noted that this capping probably was limited to the repointing of stones in place atop the wall.

Room 23(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 23(1) has a somewhat irregular shape. The maximum lengths and widths are given below. We calculated the floor area by dividing the surface into small polygons and adding their areas.

Length and axis: 2.56 m E-W

Width and axis: 2.07 m N-S

Roofed floor area: 6.15 m^2

Maximum headroom: 1.80 m

Minimum headroom: 1.70 m

One of the most interesting facts about Room 23(1) is that there are no roof supports in the north or south walls. Supporting beams could have been set atop or socketed into the west wall. If so, any roof supports would have been socketed into the alcove at the eastern end. The alcove wall now shows no sign of having been modified to create sockets, but the wall is quite pocked with solution pits and any sockets may have eroded away. Plaster details on the second story indicate that the room did have a roof at one time. A final sub-feature of note is the corner hearth.

Walls

Room 23(1) was built along with Room 22(1). Room 98(2) was added above both rooms. The three rooms were constructed as a unit between the exterior north wall of Room 20(1) and the exterior south and west walls of Room 25. The north wall of Room 23(1) is composed of two sectors

North Wall, Sector 1. This sector was added to the exterior of the south and west walls of Room 25. It was built using a single stone technique with stones of uniform size, consisting of large blocks. The joint work is extruded. Chinking was used on about 50% of the joints, but most of the chinked joints occur below the doorway.

North Wall, Sector 2. This single sector consists of what once would have been the south and west walls of Room 25. The footing of this sector consists of upright bedrock slabs and large blocks turned up on edge. Above the footing, the stones are extremely variable in size and shape, and virtually all exposed faces are naturally fractured. All joint work is extruded, and large masses of mud have been chinked in multiple courses. Several burned stones are recycled elements. Above the hearth (Hearth 1), the wall is sooted and lightly oxidized.

East Wall. This is the alcove wall, which is unmodified, except for sooting.

South Wall, Sector 1. This sector consists of the exterior of the north walls of Room 20(1), and has been completely plastered with a pink (5YR 6/4) monochrome. The only rocks visible are those at the base of the wall, where plaster has exfoliated from previous dampness. These are large, unshaped blocks. They may have been added during a repair.

West Wall, Sector 1. This sector was built using the single stone method, using uniform, large, mostly unshaped blocks. Mortar joints are mostly extruded, although flush joints occur. Chinking is very limited in distribution. The wall is not plastered.

Floor

The floor of Room 23(1) was cleaned and swept as part of this project. No new floor features were discovered, although a number of breakdowns in the floor were disclosed as the work proceeded. These breaks in the floor are a result of visitor access during past decades. The hearth noted by Fewkes remains in position as shown on the Morse map.

Condition

The only damage to Room 23(1) has occurred to the south wall, although that damage appears very old. The condition involves plaster exfoliation, but it does not appear to be acute or active. Lower down on the south wall, some dampness and plaster exfoliation occurred during the winter of 1995-96.

Room 23(1) Architectural Context: History of Construction and Use

Room 23(1) was built as a unit with Rooms 22(1) and 98(2). The west wall of Room 23(1) is a cross wall that separates the two ground floor rooms. This west wall supports the roof between the two lower rooms and Room 98(2). The wing formed by these three rooms was added after Rooms 19(1) and 20(1), and preceded Rooms 21(1) and 97(2). Most of this south wing was built between A.D. 1275 and 1278.

Room 23(1) was used as a living room, based on the large room size and the well-developed corner hearth. Since the unit has an insulating room on all available sides, it could have been used as a cold weather residence.

Room 25

Excavation and Preservation History

Room 25 (Figure 4.7) was first designated as Room 79 by Nordenskiold, and was later excavated by Fewkes (1911:43), who limited his remarks to these:

> ...rooms 25, 26, and 27, which are situated in a row, have for their rear wall the vertical face of the cliff. Although these rooms are only one story high, the roof of the cave slopes down low enough in the rear to form their roofs. The outer walls were plastered, and each room was entered by a separate doorway. Although their side walls were somewhat destroyed, they appear not to have been intercommunicating [Fewkes 1911:43].

Fewkes patched a hole below the entryway to Room 25 as indicated in a photograph (Mesa Verde National Park Research Center Negative No. 3081) (Chandler 1989:27). The north wall was also apparently capped. All walls have original masonry, according to the Morse map, which also depicts a hearth in the southwest corner of the room that was not mentioned by Fewkes. In addition, oxidation and sooting in the northwest corner indicate that there once was a hearth there, but it may have later been torn out when the other one was added. It seems unlikely that the room was large enough to have needed two contemporaneous hearths.

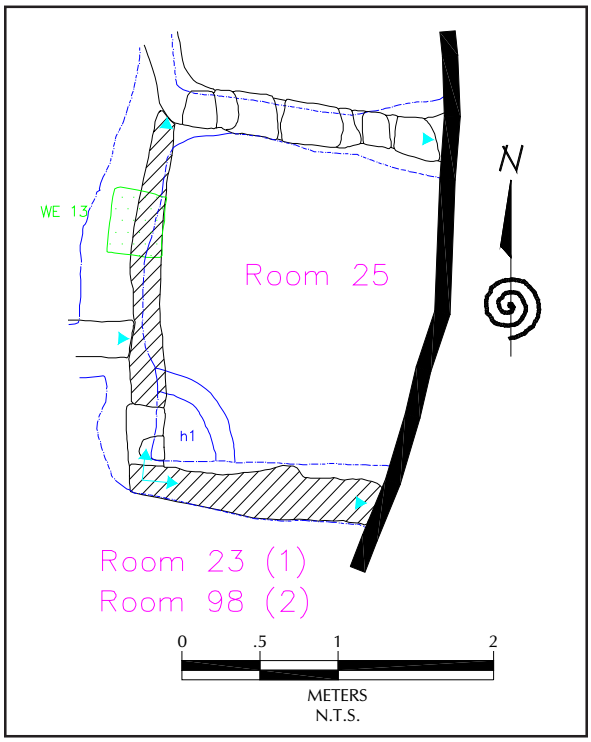

Figure 4.7. Plan View of Room 25.

Room 25 Summary of Architecture and Condition in 1995

General Description and Major Dimensions

With the exception of the hearths, the interior of Room 25 conforms to what was previously observed by everyone. The hearth in the southwest corner is no longer exposed, but apparently had a coping around it, and the oxidation is still visible. The exterior of the room was examined as part of Open Area J. This examination provided some mild clues to the construction sequence for the three adjoining rooms, based on plaster sequence, and the abutment and bonding sequence of the walls. The exterior northwest corner of Room 25 exhibits a bond along the lower portion of the wall, indicating that Rooms 25, 26, and 27 were laid out as a single unit. The block of the two northernmost rooms was completely enclosed prior to finishing Room 25. Exterior plaster sequences support this interpretation, although not conclusively (please see the discussion of Open Area J, eastern facade for the overall construction history of Courtyard Complex J). Dimensions of Room 25 are:

Length and axis: 2.03 m N-S

Width and axis: 1.44 m E-W

Roofed floor area: 2.92 m^2

Maximum headroom: 2.02 m

Walls

Room 25 was laid out together with Rooms 26 and 27, but completed in two stages. Consequently, the north wall is formed of two sectors, and the west and south walls together form a single sector. The alcove wall was used for the eastern wall.

North Wall, Sector 1. This wall was completed prior to the others enclosing the room. Stonework consists of large unshaped stones, with heavily extruded joints, and chinking. There were two episodes of plastering along this wall. An earlier one is limited to the lower western portion. The pink (5YR 6/4) color may have been modified by the effects of a hearth. The lower middle portion of the north wall is covered with extruded smoothed plaster that is probably related to modern preservation work.

North Wall, Sector 2. It is likely that this sector is related to preservation work done by Fewkes. It is limited in extent to a "stack" of wet-laid masonry in the northwest corner. This masonry consists of much more regularly shaped blocks. There is no discoloration from the effects

of using the hearth. This sector could also have been related to prehistoric repairs, however, since it seems likely that this area was subject to moisture when the site was occupied.

South and West Walls, Sector 1. These walls were built as a unit from variably sized, unshaped stones placed above a partial footing of upright slabs. Mortar can only be described as copious, with large areas of large chinking stones. The upper portion of the wall has so much mortar that it forms extruded smoothed plaster. None of the stone was shaped. Taken together, about 40% of the wall was chinked, generally with chunks of stone. The top and lower portions of the south wall have more chinking. The chinking increases near the room corners in the west wall. These factors suggest that at least two masons were at work within the structure during construction. There were a very few small pieces of recycled oxidized stones.

Floor

The floor of Room 25 was cleared during the documentation process. This floor has been heavily augmented by stabilization work, some of which was probably placed to prevent modern foot traffic impacts. Breakage through the floor in spots reveals largely unconsolidated sediments below it. No additional features were observed, although the room has at least two corner hearths.

Condition

Room 25 probably receives some seepage of moisture from the alcove wall and ceiling, although none was evident during the winter of 1995-1996. Since the fill level in Room 25 is lower than that in Room 26 by approximately 22 cm, it receives some ground moisture if seepage occurs in Room 26. Moisture that dripped into Room 26 during that winter was minor, and was intercepted with a bucket.

Room 25 Architectural Context: History of Construction and Use

Room 25 was built as part of a block of three rooms against the back of the alcove. The three rooms are similar in size, and each had at least one corner hearth. Rooms 25 and 27 each had wall pegs/peg holes. First, Rooms 25, 26, and 27 were all laid out together to a height of 60-75 cm. The walls of Room 27 were completed first, and then Room 26 was enclosed. Finally, Room 25 was completed. Rooms 25-27 thus formed the eastern facade of Open Area J. The exteriors were then plastered with a full-wall scheme and auras were added around the doorways.

Room 25 was used as a small living room, based on the features within the room and the plaster. The room contains the remnants of two corner hearths, one of which was probably used before the other. Perhaps the first one did not draw well and a replacement was installed in the southwest corner. Room 25 also has three wall pegs/peg holes. The doorway of this unit sealed from the exterior (HWI 158.00).

We think that the construction of Rooms 25, 26 and 27 probably occurred between A.D. 1260 and 1270, and perhaps much earlier. Kiva X probably served the inhabitants of Room 25 before Kiva J was built in A.D. 1271.

Room 26

Excavation and Preservation History

Room 26 was originally designated as Room 78 by Nordenskiold. It was excavated by Fewkes (1911:43). He fails to discuss this room beyond the quoted passage for Room 25. According to Morse's map and as noted by Chandler (1989:28), an embrasure on the exterior of the room was repaired by Fewkes, and he capped the north and south walls of the room (Mesa Verde National Park Research Center, Negative No. 3081). Still, all walls retain original masonry. Field inspection indicates that Fewkes also made a small repair along the exterior southern jamb of the entryway, which is discussed with Open Area J, eastern facade.

Room 26 Summary of Architecture and Condition in 1995

General Description and Major Dimensions

With the exception of the doorway to Open Area J, Room 26 lacks any kind of sub-features (Figure 4.8). There is an oxidation and sooting plume in the southwest corner that identifies a now-buried hearth. The west wall extends to the top of the alcove, but much of the north and south walls has fallen, a fact noted by Fewkes during his work near the turn of the century. Dimensions are as follows:

Length and axis: 1.58 m N-S

Width and axis: 1.41 m E-W

Roofed floor area: 2.23 m^2

Maximum headroom: 1.72 m

Walls

Room 26 was built by adding walls to the exterior southwest corner of Room 27, but the abutment pattern is very poorly defined. The deflection in the plan view is more distinctive than the degree of abutment, which is obscured by large amounts of mortar. All constructed wall sectors look alike, and there is no plastering on any of them. As a result, they are all considered a single wall sector. The east wall of the room is formed by the alcove wall.

All constructed walls of Room 26 are formed of variably sized stones, which are generally large blocks and tabular pieces. There are a number of sooted or burned stones, recycled elements from elsewhere. Many of the stones are simply the narrow edges of stones that were placed with "better" faces toward the exterior along the west wall. This room has more large stone, and better joint finish than the walls enclosing Room 25, and there is less chinking. Subjectively, Room 26 seems to have been better manufactured than Room 25.

Floor

The floor in Room 26 was manufactured during the modern era, and seals the deposits below. It is higher than other floors in those units around it. A hearth is buried beneath the fill level in the southwestern corner. It does not appear on Morse's map, nor does Fewkes mention it. It may be of Euro-American origins.

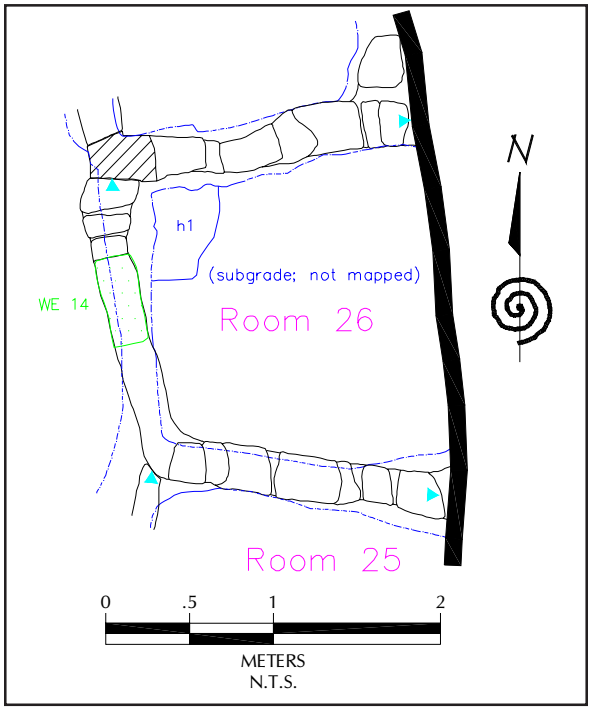

Figure 4.8. Plan View of Room 26.

Condition

Room 26 has an elevated fill level, in comparison with the units on either side. Moisture that fell into the room from ceiling drips in 1995 and 1996 was captured in buckets and probably had a negligible effect. It is possible that moisture has been entering the room in cycles since abandonment and the north wall had been damaged by softening of the mortar. Upon discovering this problem, a plastic bucket placed atop the wall captured most the moisture. Very little moisture emerged by moving laterally through the west wall of the room, since none was visible from Open Area J.

Room 26 Architectural Context: History of Construction and Use

Room 26 was laid out along with Rooms 25 and 27 as part of a three-room unit, probably between A.D. 1260 and 1270. The rooms were constructed on a ledge of bedrock or large boulders. Although laid out as a planned unit of three rooms, each room seemingly was finished independently, as various finishing details attest. The deflection at the join between west wall of Room 26 and the west wall of Room 27 suggests that Room 27 was finished first. In addition, the abutment along the upper exterior southwest corner of Room 26 indicates that Room 25 was finished last.

Room 26 apparently had a hearth, so for at least a portion of its use, it seems to have served as a living room in spite of its small size. The room had no plaster treatment on any of its walls, nor did it have any wall pegs. The doorway seals from the exterior and has a Height Width Index of 121.3.

Room 27

Excavation and Preservation History

Room 27 was first designated Room 77 by Nordenskiold (1893). The southern wall of Room 27 had already fallen when Fewkes began working (1911:43). Fewkes supposedly capped this wall, but the remaining stonework seems original (Chandler 1989:29). In addition, field inspection revealed two small stabilization patches were made to the exterior of this room. These areas were probably patched when the larger holes shown in an early photo (Mesa Verde National Park Research Center Negative No. 3081) were patched by Fewkes.

Room 27 Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Archeologically, Room 27 looked much as it did when Fewkes was finished working in it (Figure 4.9). Essentially quadrilateral in shape, the room sits atop a bedrock ledge, with room walls on the north, south, and west sides. In addition, there is a low masonry wall or remnant built against the alcove along the southern half of the east wall. The low wall is shown on the Morse map, but not discussed by anyone in past written records. This may be an important construct since it may be related to either room function or the need to try to keep moisture out of the room. This wall is now only about 25-30 cm above grade. It may have served as a bench or masonry shelf, although the current top is unfinished masonry, suggesting that it once went higher, perhaps even to the alcove ceiling. It may have served to keep some of the moisture from the interior of the room. It is tied to the southern wall.

The exterior walls of Room 27 are largely plastered, and are described under the eastern facade of Open Area J. Exposures of construction beneath exfoliated plasters, however, show that the west wall foundation is bedrock, and that the footing is partially composed of upright slabs. There is a step stone protruding from the exterior wall face below the wall entry.

Dimensions of Room 27 are:

Length and axis: 2.70 m N-S

Width and axis: 1.70 m E-W

Roofed floor area: 4.59 m^2

Maximum headroom: 2.14 m to fill

Walls

All walls of Room 27 were erected together using single stone construction, and hence are probably the same wall sector. The lower part of the walls was laid out together with the surrounding rooms' lower walls, and then Room 27 was completed. The alcove wall may have been part of the eastern wall.

Floor

The floor of Room 27 was swept, and was found to have no additional features besides the hearth, which we think is now buried beneath the fill level. The hearth was not mapped by Morse. We inferred that there must have been a hearth based on the presence of sooting and oxidation on the walls that join to form the northwest corner of the room. As has been noted for other hearths in this sequence of rooms, the sooting and oxidation may also represent the effects of a fire made by early visitors or excavators.

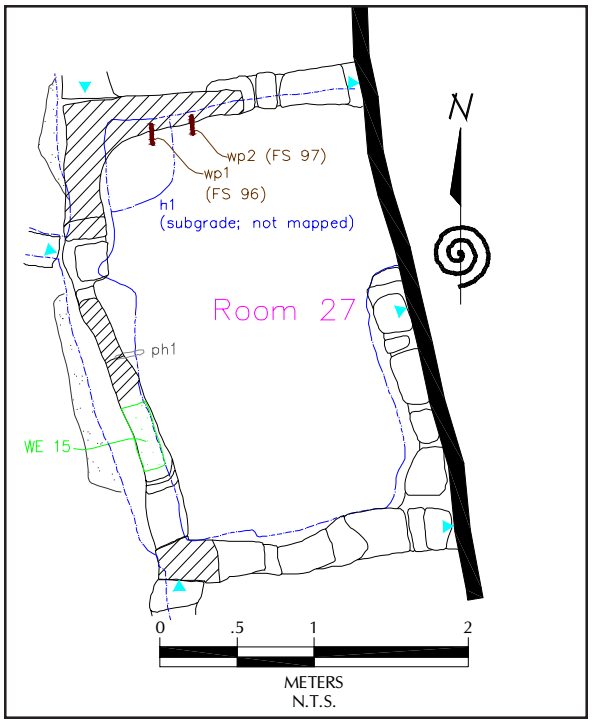

Figure 4.9. Plan View of Room 27.

Condition

Room 27 was among those hardest hit by moisture damage in the winter of 1995-1996. The north wall was damaged by seepage from the alcove ceiling directly onto the wall. Although we attempted to catch some moisture with buckets, the seepage occurred directly onto the contact between the east end of the north wall and the alcove face, permeating the mortar and softening it to the point where at least two or three interior building stones fell from the facade either into Room 27 or Open Area 14.

The low east wall of Room 27 seems undamaged. The south wall (capped by Fewkes) was damaged by dripping moisture. It is likely that the damage was not to the aboriginal construction.

Unfortunately, the west wall of Room 27 was dampened from seepage at the contact between wall top and alcove. The mortar at that point has become friable and there has been about 1 cm of surface exfoliation of the mortar joints. Exterior plaster also fell from the wall above Wall Entry 15. Water penetrated the flooring, and then moved laterally toward the west wall, evaporating along the

bedrock exposure at the base of the west wall. Some of this moisture moved up into the masonry, or simply moved downward from the areas of dampness above the entryway. The base of the wall below this doorway was also damp, although damage seems minimal, and even the plaster remains attached. The crack in the entryway sill stone probably is unrelated to this moisture situation, and may have occurred at any time, modern or ancient. There is a small hole at floor level on the wall's exterior that may be a result of rodent damage.

Room 27 Architectural Context: History of Construction and Use

Room 27 was built along with Room 25 and 26, probably as the earliest construction within Courtyard Complex J. Room 27 was probably finished first, but was closely followed by Room 26. Room 25 was completed last. The full wall plaster on the exterior of Room 27 also was applied before some of the later exterior plaster treatments. As each treatment was added to the other walls, it partially covered Room 27 plaster.

Rooms 27, 25 and 26 are related to the construction and use of Kiva X. The rooms were later used with Kiva J. Initial construction probably took place between A.D. 1260 and 1270. Construction of Kiva J probably occurred in A.D. 1271, by which time Kiva X had been filled.

Room 27 was used as a living room. Of the rooms in the unit, Room 27 has the largest headroom, floor area, and large doorway (HWI 163.64). It also has an external entry stepping stone, which is not present in any of the other rooms. Room 27 is more similar to other living rooms in Courtyard Complex J. The room interior lacks any plaster treatment, but has several wall pegs/peg holes.

Room 28(1)

Excavation and Preservation History

Room 28(1) was excavated by Fewkes, who noted that it was of fine workmanship, and two stories in height (Fewkes 1911:43):

> …with an entrance on its southern side and a window frame of stone. Its second story formerly opened on the western side into room 29. Not much now remains of the plastering that once covered the inner walls of room 28 [Fewkes 1911:43].

We now identify the second story of Room 28(1) as Room 99(2) (Figure 4.10). The exterior southwest corner of Room 28(1) was repaired by Fewkes (please see Open Area J, northern facade, and Room 29(1) discussions). Nordenskiold (1893) identifies the room as Room 73.

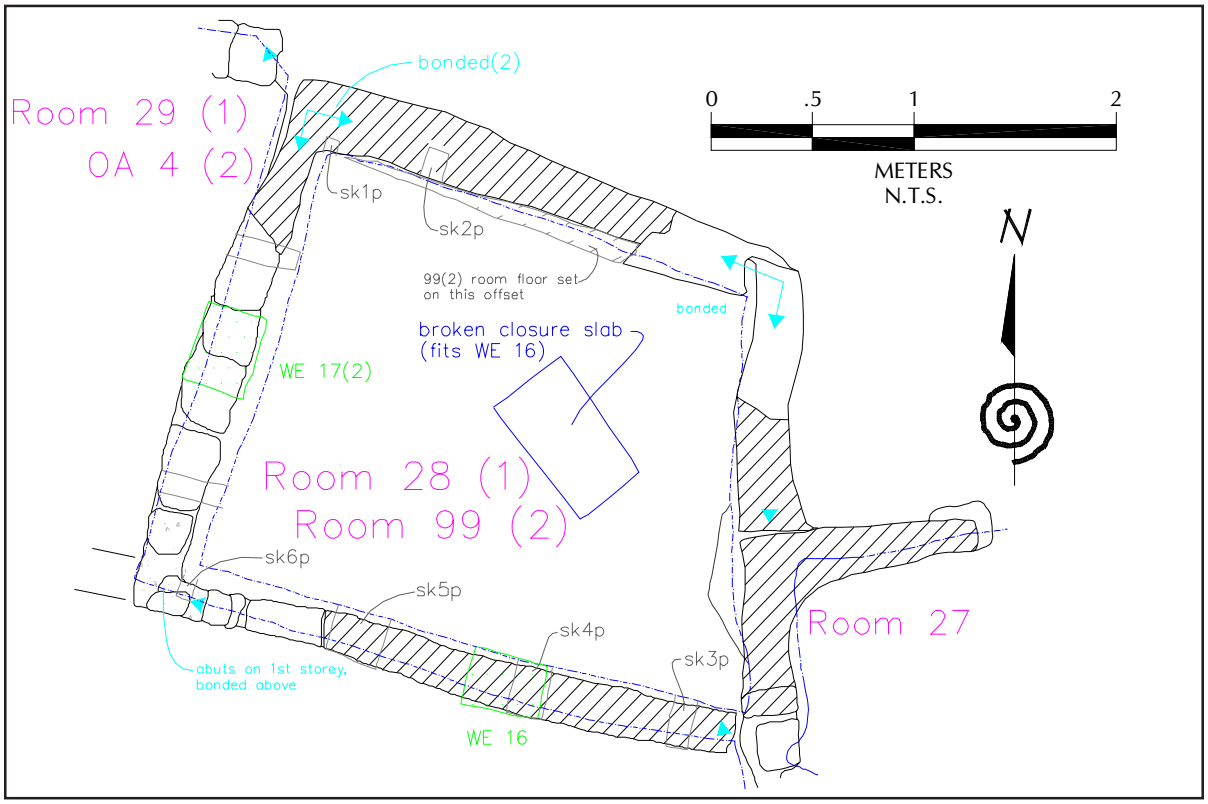

Figure 4.10. Plan View of Rooms 28(1) and 99(2).

Room 28(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 28(1) forms the first story of a two-story unit, with Room 99(2) above it. It is a large quadrilateral in shape with masonry walls on all four sides. The floor in Room 28(1) is exposed, except for a little wind-borne sediment that is scattered across it. A shaped slab that probably served as a door closure device is lying on the floor. The slab has become fractured over time, but its dimensions suggest that it once fit into the door (Wall Entry 16) in the south wall of Room 28(1). With the exception of the doorway on the second story, all details shown on Morse's map, redrafted with modifications, are associated with Room 28. These include sockets and the doorway in the south wall. Plaster is now limited to a low band along the floor. Dimensions of this room are:

Length and axis: 2.40 m E-W

Width and axis: 2.18 m N-S

Roofed floor area: 5.23 m^2

Maximum headroom: 2.1 m

Walls

Room 28(1) has very well finished single stone masonry on all four sides. The room was fitted into the space between Rooms 29(1) and 27. The north and south walls were new construction linking the outer walls of the already-constructed rooms. The eastern wall is formed partially of the exterior of Room 27, and partially of new construction. The western wall of this unit is synonymous with the exterior eastern wall of Room 29(1).

All of these walls consist of construction elements laid in semicoursed, single stone construction. Stone sizes vary considerably and material selection includes a number of recycled, sooted, or burned stones. Differences between the north and south walls hint at two different construction techniques, implying two different work groups. After the unit was enclosed, a pink (7.5YR7/4) plaster floor band was added.

Floor

The floor was swept, and seems in excellent condition. It may represent a modern preservation event since this area would have been an enticement for unregulated visitation during earlier modern periods. The floor is of puddled adobe, and is devoid of any features.

Condition

Although there was some moisture in Room 28(1), it was from drips that fell from the ceiling directly onto the floor, entering the substrate and wicking up into the north wall. This moisture was gathered in buckets. Still, photography taken months later showed dampness at the base of the north wall, with the dampness probably resulting in some loss of the plaster.

The top of the east wall shows some carbonate buildup that probably resulted from moisture transmission through the alcove stone onto the wall top. It seems that this transmission of moisture was once more prevalent than now, since the modern repair patch next to the carbonate coated area lacks a similar discoloration

There is settlement cracking at the exterior southwest corner of Room 28(1). Additional conditions, visible on the exterior west wall are described in the discussion of Room 29(1).

Architectural Context: History of Construction and Use

Room 28(1) was probably built between A.D. 1272 and 1273 after Rooms 29(1), 27, 26, and 25, based upon the abutment pattern. Unfortunately, the exterior southwest corner of Room 28(1) fell and was inaccurately reconstructed by Fewkes. For a while, this reconstruction obscured our recognition of the relationship between Rooms 28(1) and 29(1). Our interpretation is that the masonry repair done by Fewkes obscured a bond between the south and east walls of Room 29(1). The south wall of Room 28(1) was added (as an abutment) to the outside of the east facade of Room 29(1).

We think Room 28(1) was used as a storage room, mainly because there was no hearth nor are any of the walls sooted or even partially burned. However, the function and use of Room 28(1) is probably more enigmatic than its construction date. There were no wall pegs, shelves or other wall-mounted storage conventions that might be expected in a storage room. And, although the door to Room 28(1) (Wall Entry 16), was sealed from the exterior, like most in Cliff Palace, the door was relatively tall (HWI 184). The regular shape, relatively large size, high degree of overhead space, and interior plaster all suggest that the room was built to function as living room, but without a hearth there is no evidence it was used as a living room.

Room 99(2)

Excavation and Preservation History

Room 99(2) is above Room 28(1), and is a new room designation. The room was not excavated. No stabilization work was documented for the interior of the room. Since much of the wall extends to the alcove ceiling, no modern capping was ever done

Room 99(2) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 99(2) is quadrilateral in shape. The eastern wall is the unmodified alcove face. The alcove forms most of the ceiling of this room, and it is unlikely that the remainder was ever covered by a constructed roof.

With the exception of headroom, Room 99(2) shares the dimensions of the room below it:

Length and axis: 2.40 m E-W

Width and axis: 2.18 m N-S

Roofed floor area: 5.23 m^2

Maximum headroom: 1.85 m (along the west wall)

Minimum headroom: 0.00 m (at rear floor line)

Walls

Room 99(2) was constructed atop Room 28(1). All three constructed walls are bonded, normally an indicator of a single wall sector. The mortar of all three walls is identical, and all mortar work is extruded with minimal chinking. Visually, some distinctions in stone selection suggest differences in workmanship that might indicate more than one mason.

The west wall seems to have been built in two episodes. The lower part of this wall contains uniformly smaller stones positioned below the level of the doorsill. These are stones with naturally fractured edges, and none of the stones show evidence of prior use elsewhere (recycling). Above the doorsill level to the wall top, the wall is formed of uniformly large blocks. Some of these stones are pecked.

Condition

Room 99(2) is in excellent condition, however there are two problems that could affect the room condition. One problem is that birds perching atop the south and west walls have left droppings running down the facades of both walls. We do not know the chemical impacts of the droppings to plaster, mortar, and stone. The other problem is a settlement crack on the interior of the south wall. There is no evidence of continued development of the crack since Fewkes repaired the room directly below.

Room 99(2) Architectural Context: History of Construction and Use

Room 99(2) was simply built atop Room 28(1), to divide a larger open area atop Rooms 28(1) and 29(1). Room 99(2) has a very different abutment pattern and masonry style from Room 28(1) below it with much larger stones and less chinking. It is likely that the construction event was linked to the construction of Kivas J and K in A.D. 1271. Room 99(2) probably went up in either A.D. 1272 or 1273. Unfortunately, the stop rod in the doorway to Room 99(2) was too small to supply a tree-ring cutting date. The construction of the second story here is related to the construction of Room 127(2), above Room 37(1).

It seems likely that Room 99(2) was used for some type of storage, although efforts to seal pests away from foodstuffs are not apparent, aside from the exterior seal on the doorway. Room 99(2) lacks a hearth, and plaster is limited to a floor band. Ample headroom can only be found in one corner of the room. An average value for headroom is about 1.0 m, measured in the middle of the room. Probably the portion of the room that is not roofed by alcove was not enclosed. The door was tall (HWI 173.33). This door sub-feature is visible in many early photographs, and can be regarded as original. The plaster treatments on the side of Open Area 4(2) also support the conclusion that the door is original.

Room 29(1)

Excavation and Preservation History

Room 29(1) was designated Room 29 in Fewkes' (1911:43) analysis. Nordenskiold (1893) identified this unit as Room 74. The floor was in excellent condition, but was repaired by Fewkes in 1909 (Chandler 1989:31). In addition, Chandler noted that the west wall was capped by Fewkes. Field inspection indicates that this work was done at the southern end of the west wall, which seems to have been rebuilt. Further stabilization work reported in the room actually relates to Open Area 4(2) above, or to the southeast corner, which was rebuilt from the base to top of the first story. Fewkes also noted that plaster was well preserved on the interior walls.

Morse mapped Room 29(1) as part of his work. The map shows a single piece of wood protruding from each

of the north and east walls. A very poorly preserved specimen remains in the east wall, and it was sampled by Deric Nusbaum for Gila Pueblo in 1952 (GP 55). The specimen in the north wall had disappeared by 1995, and it is not known whether it is among the unprovenienced samples from Cliff Palace, or if it was ever sampled or collected for analysis.

According to Chandler's (1989:31) report, Warren Kuh photographed Room 29(1) in 1976, and measured the crack in the east wall as part of an overall deterioration quantification program at Cliff Palace. There is no record that this work ever continued, and it is not known whether the crack was active.

Room 29(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 29(1) forms a large quadrilateral space along the northern side of Open Area J, but the south wall has fallen (Figure 4.11). The top of stones buried below grade is probably foundation or footing elements for the south wall. The large blocks now sitting on the ground surface are reused pilaster stones that were evidently placed to facilitate interpretation of the area during the current century. They are not located in their original position. There is no remaining doorway into Room 29(1), but it is likely that there was a doorway in the southern wall. It seems unlikely that there was a roof hatch.

The Morse map also depicts numerous wall features in Room 29(1), most of which are wall pegs/peg holes and secondary roofing support sockets in the north wall. A pair of primary sockets in the east wall probably supplied support for the secondaries. Opposing walls have fallen to a level below where the mated sockets would be found.

All three remaining walls of Room 29 retain much of the original plaster, which extends up to the ceiling line below the primaries and secondaries. At the bottom of all remaining three walls is a floor band of contrasting color. The northwest corner of the room incorporates a portion of the arc of the "round tower", Rooms 36(1) and 126(2). Room 29(1) was generally attached by abutment against the curved exterior. The "tower" is built atop a bedrock boulder. Room 29(1) dimensions are:

Length and axis: 2.43 m E-W

Width and axis: 2.38 m N-S

Roofed floor area: 5.78 m^2

Headroom: 1.97 m (floor)

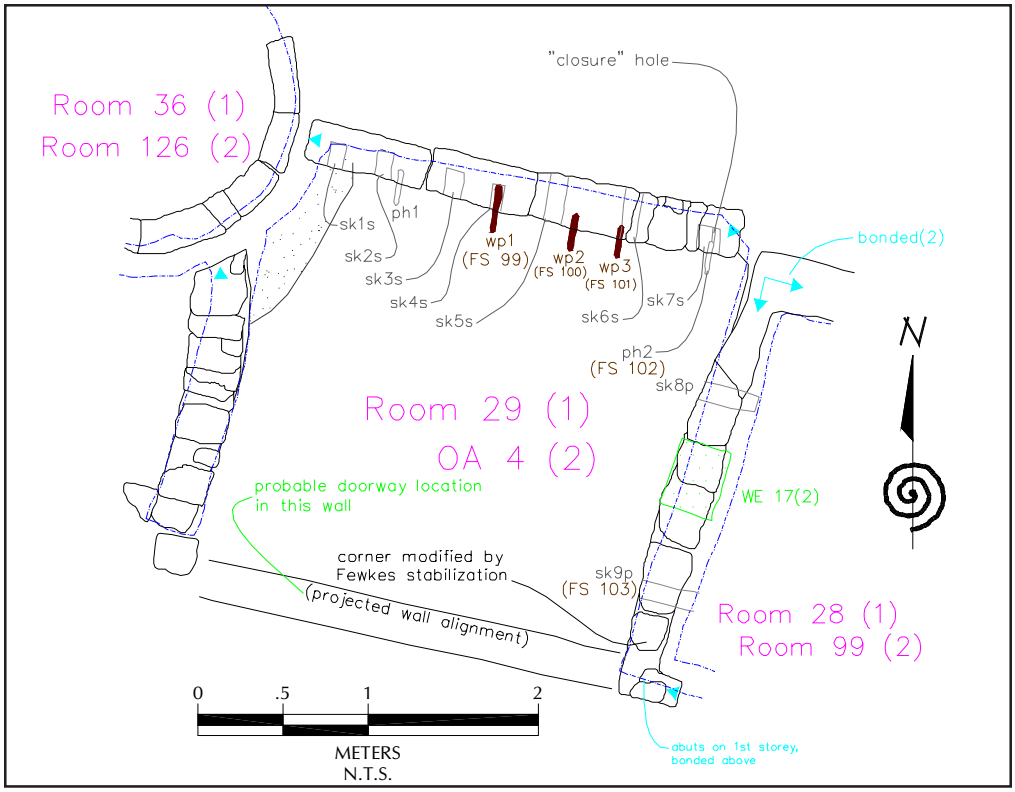

Figure 4.11. Plan View of Room 29(1) and Open Area 4(2).

Walls

Very little masonry is visible within Room 29(1), since all three remaining walls are covered with plaster. All stones that show through the exfoliation are blocks. As a result, the walls of this structure have not been subdivided into sectors, except for the plaster treatments. All walls received a pink (7.5YR 7/4) applied coat using a full-wall scheme. Although the original height of the plaster is not known, it is now preserved up to the height of the wall pegs, almost as high as the bottom of the primary sockets in the east wall. This distance ranges between 1.80 and 1.90 m above the flooring.

The floor band is similarly homogeneous, and is essentially a white to light gray (5YR 7/1) color. This material probably made the room appear brighter or more attractive. The details of plaster application suggest that the floor band did not extend much higher than 38 cm. The band extends across the exterior of adjacent Room 36(1) covering the appropriate portions of the bedrock boulder upon which the room is built.

Floor

The floor in Room 29(1) consists of stabilization adobe that has weathered well, but which obscures and protects any original flooring in the room. This stabilized floor was installed by Fewkes in 1909 for conducting walking tours through Cliff Palace (Chandler 1989:31). The floor was reconstructed above the projected location of the south wall.

Condition

Room 29(1) continues to be in excellent condition, and the floor shows little effect from continuous wear, probably because the practice of allowing visitors into this part of the site has long been discontinued. Plaster appears largely unaffected, and exfoliation seems to be minimal compared with other locations within Cliff Palace. The large crack in the east wall could be continuing to spread, but probably this movement was addressed when Fewkes rebuilt the southeastern corner. In any event, comparisons with the Kuh photographs indicate no change, even though over 20 years have passed since the photographs were taken.

Room 29(1) had several wall pegs and a single specimen of construction primary beam. All of the wall pegs are either Cottonwood or Aspen (*Populus spp)* (FS 99-102). The primary beam is Douglas fir (Specimen numbers GP 55 and MV 46). There is no information on the dating of these specimens in the older tree-ring literature or in a file check of the Laboratory of Tree Ring Research records.

Room 29(1) Architectural Context: History of Construction and Use

This entire area was one anchoring point for the northern wing of Courtyard Complex J. Room 29(1) was built against the exterior of Rooms 36(1) and 126(2), probably in A.D 1271 or 1272. We think that all walls of Room 29(1) were built as a single unit, abutted against the exterior of Room 36(1). Later, Room 28(1) was added. Wall abutments show that Room 37(1) was built after Room 29(1) and has a relevant tree-ring date of A.D. 1272.

Of considerable interest to us is the function of this room. We think that Room 29(1) was a storage room for ceremonial paraphernalia or a warm weather living space. There was no hearth, the walls are totally unsooted, and there are no fire plumes. Room 29(1) does have plastered walls with a well-preserved floor band and at least two sets of wall pegs. These features suggest that the room was not used for cooking but perhaps for storage associated with ceremonial or social functions of Kivas X and J nearby.

Open Area 4(2)

Excavation and Preservation History

Open Area 4(2) was previously designated as the second story room above Room 29 by Fewkes, or Room 74 by Nordenskiold. The excellent preservation of the plaster was the only observation recorded on this room.

Open Area 4(2) Summary of Architecture and Condition in 1995

We have redesignated this architectural space as an open area (Open Area 4(2)) instead of a room, because there is no evidence that a southern wall ever existed to enclose the space. The area was open toward the south, toward the "courtyard" space above Kiva J. The plaster treatment is continuous around the exterior southwestern corner of Room 99(2), onto Open Area J. There is no break in the plaster treatment for any south wall. The east wall of Open Area 4(2), with its doorway into Room 99(2), was completely visible from Open Area J. This is probably the reason why the east wall of Open Area 4(2) was plastered with one color, over which a dado was applied. The northern facade shows a single monochromatic plaster coating. It is certain that there was a west wall of this unit, however.

General Description and Major Dimensions

Open Area 4(2) forms a large quadrilateral space directly above Room 29(1). The headroom is only limited by the alcove ceiling that slopes up rapidly in this location. The floor area is defined by the size of the room below and the two remaining walls (a northern and an eastern facade). There once was a wall defining the western margin, based on plaster details on the exterior of Room 127(2).

Length and axis: 2.43 m E-W

Width and axis: 2.38 m N-S

Area size: 5.78 m^2

Walls

Each remaining wall in Open Area 4(2) is a separate sector, although most of the masonry has been plastered and stonework and mortar attributes are largely obscured. The north wall probably stands close to its original height of about 1.0 m above the projected floor line. What remains is largely plastered with a mud wash from floor line to the top course. This original pink (7.5YR 7/4) plaster is homogeneous in texture, and too weathered to show any application marks. Only the stonework of the basal two courses and the top course of this wall is not coated with this wash. The outlines of many of the stones are visible beneath the wash and they are large, uniform blocks and tabular elements, many of which were shaped by pecking or have naturally fractured faces.

The top course of the north wall differs substantially from the rest of the wall, with very long tabular stones, several of which are sooted and obviously came from elsewhere. The mortar work of this course overlies the plaster, indicating that the top course was placed after the wall was plastered. We originally thought that this top course was a stabilization intervention, although there is no record of the work nor was an obvious preservation advantage gained. We now think that this course was added aboriginally, perhaps to divide this architectural space from the one farther to the north (Room 127(2)). This interpretation is supported by the evaluation of historic pre-excavation photographs, which show the wall as it is now.

The east wall was also heavily plastered, but in two separate episodes. The first of these is associated with the north wall plastering event when the east wall was plastered in the same pink (7.5YR 7/4) color. The more westerly facing portion of the east wall has undergone more solar bleaching and is lighter in coloration. This plaster runs to a height above the north wall, and deflects upward around the doorway in order to surround it. In the second plastering episode, the lower half of the east wall was coated with a light gray (5YR 7/1) dado, about 75 cm above the floor line. This extends all the way across the wall. There is also some discoloration around the doorway that may be an aura, but it is extremely faint.

Above the plaster near the top of the east wall, most of the stones are large blocks, except for flat tabular stones placed near the top. This change to flatter stones probably indicates that the builders were approaching what they were going to consider the top of the wall. Mortar work is extruded, and joints are broad, but chinking is rare. The stones along this upper portion of the wall are uniform in size, and most are large. The faces are most often pecked, and probably represent the finished, "better" sides of stones visible inside Room 99(2). Stones below the doorsill level in the other room were rather small, and it seems likely that stones that are covered by the plaster are also small.

A final event in the history of Open Area 4(2) may well be the bombardment of the east wall facade with small mud balls, which led to a small grouping of them above the dado to the south of Wall Entry 1. We found another mud ball at the same level on the northern side of the doorway.

Condition

Open Area 4(2) is in excellent condition, with minimal levels of plaster exfoliation. The two cracks near the base of the wall seemingly were stabilized when Fewkes made his repair to the exterior southwest corner of Room 29(1). The new mortar has no cracking other than minimal shrinkage cracks. The crack in the east wall that begins near the floor line of Room 29(1) actually extends through socket sk9p upwards to the second story. It does not appear to be changing at all.

Open Area 4(2) Architectural Context: History of Construction and Use

We think that the architectural space that includes Open Area 4(2) was originally larger, but was split into an enclosed area and a smaller rooftop open area between A.D. 1272 and 1273, when Rooms 37(1) and 126(2) were built. Open Area 4(2) seems to have had some later minor remodeling when the top course was added to the north wall. Although this could be a preservation addition, it seems that it was the result of a desire to separate Open Area 4(2) from Room 127(2).

The elevated open area would have been a good place from which to watch activities in Courtyard Complex J. There is no sooting that might suggest that a hearth once was present, nor any other indication that the area served

as an external working space. The degree of plaster embellishment, even though further unadorned with painted elements, seems more related to social contacts.

Kiva X

We designated a new architectural space, Kiva X as a result of our fieldwork in Cliff Palace. The space is on the Morse map, but is not distinguished from Kiva J. The structure is now exposed as a single course of stones partially buried in Open Area J, and also as a series of large upright stones or bedrock boulders along the eastern wall of the recess in Kiva J.

Although there is a limited amount of architecture that relates to Kiva X, it is a very important feature of Cliff Palace. Without it, we are forced to consider whether all architectural spaces in Courtyard Complex J were built in the as A.D. 1270s, since that decade supplies the only dates that we have for Kiva J and the remainder of the complex.

Kiva J

Excavation and Preservation History

Nordenskiold supplies the initial information on Kiva J, designating it as Room 76 (Nordenskiold 1893:60-61). Kiva J then became cloaked in anonymity until Fewkes worked at Cliff Palace in the first decade of the twentieth century. In his listing of Cliff Palace kivas, Fewkes (1911:56) comments:

> Kiva J is round; it is 14 feet in diameter and measures 8 feet 4 inches from the floor to the top of the wall. The height from the floor to the top of one of the pilasters is 5 feet 10 inches. The banquette is 3 feet 2 inches high. The deep banquette, as is usually the case, is above the flue, which opens in the southwestern wall. The number of pedestals is six; their average breadth is 2 feet. The deflector consists of a stone wall rising 20 inches above the kiva floor. There are seven mural niches. The kiva walls were thickly plastered with adobe, and show the action of smoke.
>
> The open space east of the kiva, formerly contiguous with its roof, is somewhat larger than is usually the case, making this the largest plaza in Cliff Palace, except that of the plaza quarter. There are remnants of rooms southwest of the kiva [Fewkes 1911: 56].

Morse mapped Kiva J along with Cliff Palace in 1934. In 1935, Al Lancaster apparently discovered handprints on one of the pilasters, and drew a sketch (Lancaster 1935). Much later, Jim Copeland and Gay Ives surveyed the decorations on the plaster in Kiva J, finding several interesting details (Copeland and Ives 1973):

> Evidence of red paint on southwest wall. On the northeast pilaster, are eight (8) handprints done in white paint. They are in two horizontal rows with four handprints to each row. They average 16 cm (6 ¼") in hieght (sic.) And vary from 5.5 cm (2") to 10.5 cm (4") in width.

Rather than being "stamped" handprints, they apparently were drawn on the pilaster (Copeland and Ives 1973: Figure 4).

In 1985, Silver noted a "possible white handprint on the NE pilaster. Mostly, the white paint survives as fragmentary traces or smudges." Color is evidently pinkish white (5YR 8/2). In addition, Silver's (1986) comments on what she viewed as a heavily stabilized unit can be summarized as follows:

1. Fragmentary prehistoric plaster, survives as a pinkish gray floor band at the base of the wall on north, south, and east. The floor band adheres to the wall but is cracked and eroded.

2. Pilasters have sooted plaster, also extending below the banquettes.

3. Sooted plaster near the ventilator tunnel is detached and loose.

4. "Several" applications of colored wash; additional colors besides the historic include pink (5YR 7/4).

5. "An experiment in covering up the fire-blackened plaster resulted in a thinly applied colored wash over those areas, especially the pilasters. It can be said with certainty that this colored wash is historic rather than prehistoric because it covers Fewkes' designation for the Kiva, a stenciled 'J'". Historic plaster is flaking, cracked, and loose. The color for this wash is pink (7.5YR 7/4). Some dribbles of historic plaster/wash overlie sooted plaster near the ventilator tunnel.

6. About 100 square feet of plaster remaining: 34 % classed as in fair condition, 66 % classed as in poor condition.

7. Conservation Priority for painted areas: moderately high.

In a couple of instances, Silver's descriptions on the structure do not match those given by Fewkes: Her kiva diameter measurement is 11 feet, and only five niches

are noted. She also notes both a hearth and a sipapu, neither of which are specifically mentioned by Fewkes. Floor features are not shown on Fewkes' ground plan, even though he does refer to the deflector.

Kiva J Summary of Architecture and Condition in 1995

Kiva J (Figures 4.12 and 4.13) was documented as part of our project because water was moving into the substrate in the alcove behind Rooms 26 and 27 to the east of Open Area J. Water was also dripping from the alcove ceiling into Room 28(2). In addition, drops fell from the alcove ceiling directly into Kiva J, dampening the floor. Along the basal portion of the eastern banquette, the wall was also damp during the documentation period**.** The floor was not cleared during this fieldwork.

General Description and Major Dimensions

Kiva J is circular in plan, with a recess extending to the south, and six pilasters. We have numbered the pilasters in the same method initially used by Robert H. Lister at Mesa Verde, starting with the pilaster immediately west of the recess. Presumably, this kiva had a cribbed roof. Much of the original wall surface remains plastered. Much of the upper wall was repaired and reconstructed by J. W. Fewkes in 1909.

Dimensions are:

Overall north-south diameter, below banquette: 3.87 m

Overall east-west diameter, below banquette: 4.05 m, above banquette: 4.62 m

Floor area below banquette: 12.31 m^2

Banquette/recess height above floor: Pilaster 1-2: 1.06 m, Pilaster 2-3: 1.03 m, Pilaster 3-4: 1.05 m, Pilaster 4-5: 1.01 m, Pilaster 5-6: 1.06 m, Recess: 1.03 m

Average banquette depths: Pilaster 1-2: 39 cm, Pilaster 2-3: 40 cm, Pilaster 3-4: 30 cm, Pilaster 4-5: 15 cm, Pilaster 5-6: 28 cm

Wall Sectors

Two wall sectors were defined during the study of this unit; one is original construction and the second is preservation work.

Wall Sector 1

Wall Sector 1 is original construction, consisting of large shaped blocks set into mud mortar. There are a few isolated pockets of smaller stone at points below the

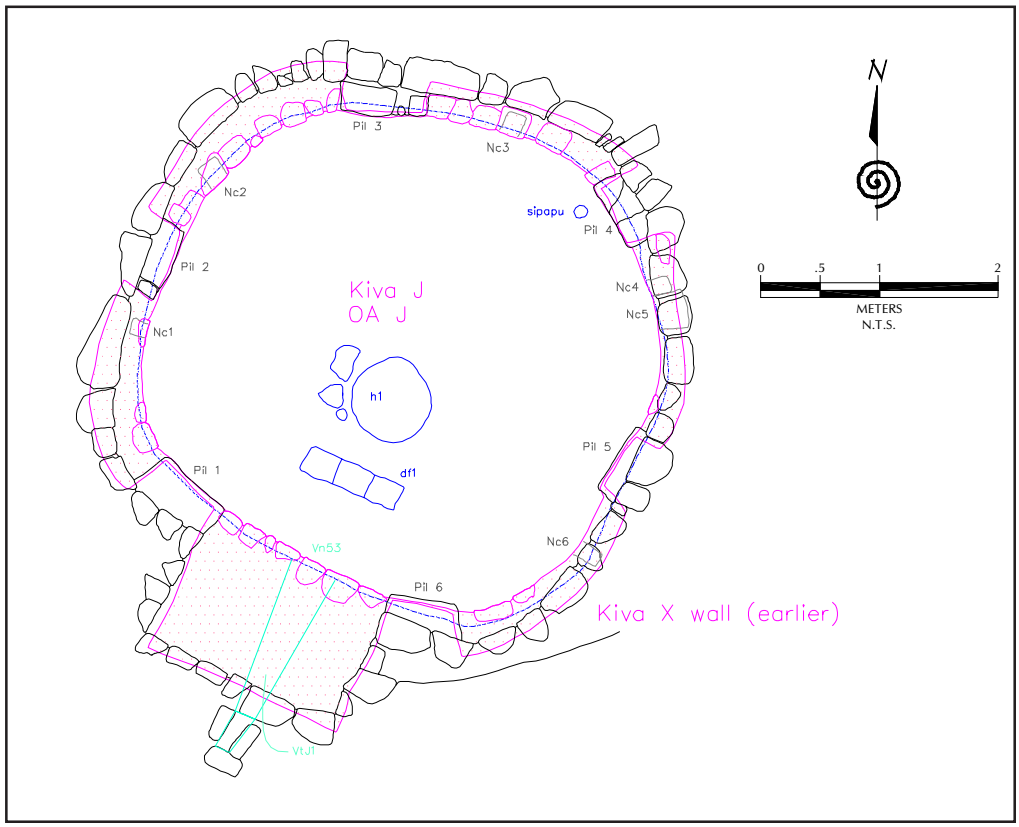

Figure 4.12. Plan View of Kiva J, with Open Area J above.

banquette top, and bedrock was incorporated into the upper wall between Pilasters 4 and 5, and 5 and 6. Almost the entire remaining original upper wall is covered with a sooted plaster, as is about 40 % of the lower wall/ banquette face.

Wall Sector 2

Wall Sector 2 includes all identifiable preservation work done by Fewkes in 1909. Although mostly involving upper wall reconstruction, a number of pilaster repairs and veneer patches are also present. The work consists of thick joints and extruded smoothed mud plaster, using large blocky stones that occasionally protrude through the surface. Overpointed patchwork is a related occurrence. In some cases, the banquette top was repaired and the top course reset. The mortar used was light gray (10YR 7/2) and very pale brown (10YR 7/3). The plaster was pink (7.5YR 7/4).

Miscellaneous Patches/Repair

With the exception of Pilaster 3, we did not observe any other preservation work in Kiva J than that which was done by Fewkes in 1909.

Floor

Once it had dried out a little, the floor was cleaned and swept. We uncovered a well-crafted, puddled adobe floor. Floor features in this kiva are limited to the deflector, hearth, and a sipapu. We located the sipapu near the base of Pilaster 4 although it was not shown on the Morse map. In addition, several stones set along the western margin of the hearth suggest that perhaps an earlier hearth was remodeled. The current one is partly made from bedrock, and partially from masonry. Stabilization work has altered the hearth somewhat.

Condition

Kiva J is in good condition, overall. The masonry has active small areas of cumulative and long-range breakdown below Pilasters 3 and 5, but veneer failure is not imminent unless accelerated by the1995-1996 moisture seepage. Plaster failures are more likely, and exfoliation is occurring along the base of the wall between Pilasters 1 and 2, and below Pilaster 5.

Kiva J Architectural Context: History of Construction and Use

Based on a single tree-ring date we think that Kiva J was constructed inside the older, filled shell of Kiva X late in A.D. 1271. The dated wood specimen is embedded horizontally into the wall of Kiva J between Pilasters 5 and 6, making it very unlikely that it simply represents an episode of repair, especially of the roof. The late date also makes it unlikely that it was dead wood collected for construction. In addition, Kiva K was almost certainly built in the same year. Kiva J has at least three original layers of plaster, suggesting periodic replasterings as soot covered the outer layer.

The function and use of Kiva J and its predecessor Kiva X are linked to the uses of surrounding architectural spaces. Ordinarily, it would be a simple matter to ascribe a function to Kiva J, which generally would involve it serving as socio-ceremonial space that integrated several households, perhaps based on a lineage principle. We think that Kiva J was also used as a seasonal living room, in the manner suggested by Lekson (1989:161). This type of use would account for the heavy sooting and replasterings that kivas receive during occupation, a process that is generally not found in surface rooms, even those with hearths.

Miscellaneous Structure 2

Miscellaneous Structure 2 is the base of a short wall that links the back of the arc of Kiva X with the southern facade of Open Area J on the exterior of Room 22(1). It is shown in outline on the Morse map. Miscellaneous Structure 2 is a single course of stone above grade. Soil elevation is higher on the west side than the east side of Miscellaneous Structure 2, such that it functions as a retaining wall. This course suggests that as late or later than Room 21(1) was built, another room was either planned or actually built against the exterior north wall of Room 22 (1). If the room was completed, it had no effect on the remaining attributes of the southern facade of Open Area J, which was plastered. One effect of any such room would have been that access into Room 97(2) would probably have been across the rooftop of this hypothetical unit.

Open Area J (Courtyard J/Plaza J) and Miscellaneous Structure 1

Open Area J is at the heart of Courtyard Complex J, situated above Kiva J and synonymous with what has heretofore been called Court J or Plaza J. The northern facade of Open Area J includes the exterior southern walls of Rooms 28(1) and 99(2). The exterior southern wall of Room 29(1) was also part of the northern facade of Open Area J, although it had fallen into Kiva J by the time the site was excavated.

The northwestern margin of Open Area J was also partially defined by the exterior of the round tower (Rooms 36(1) and 126(2)). It formed one anchoring point for architectural additions in Courtyard Complex J. The tower may not be residential architecture and

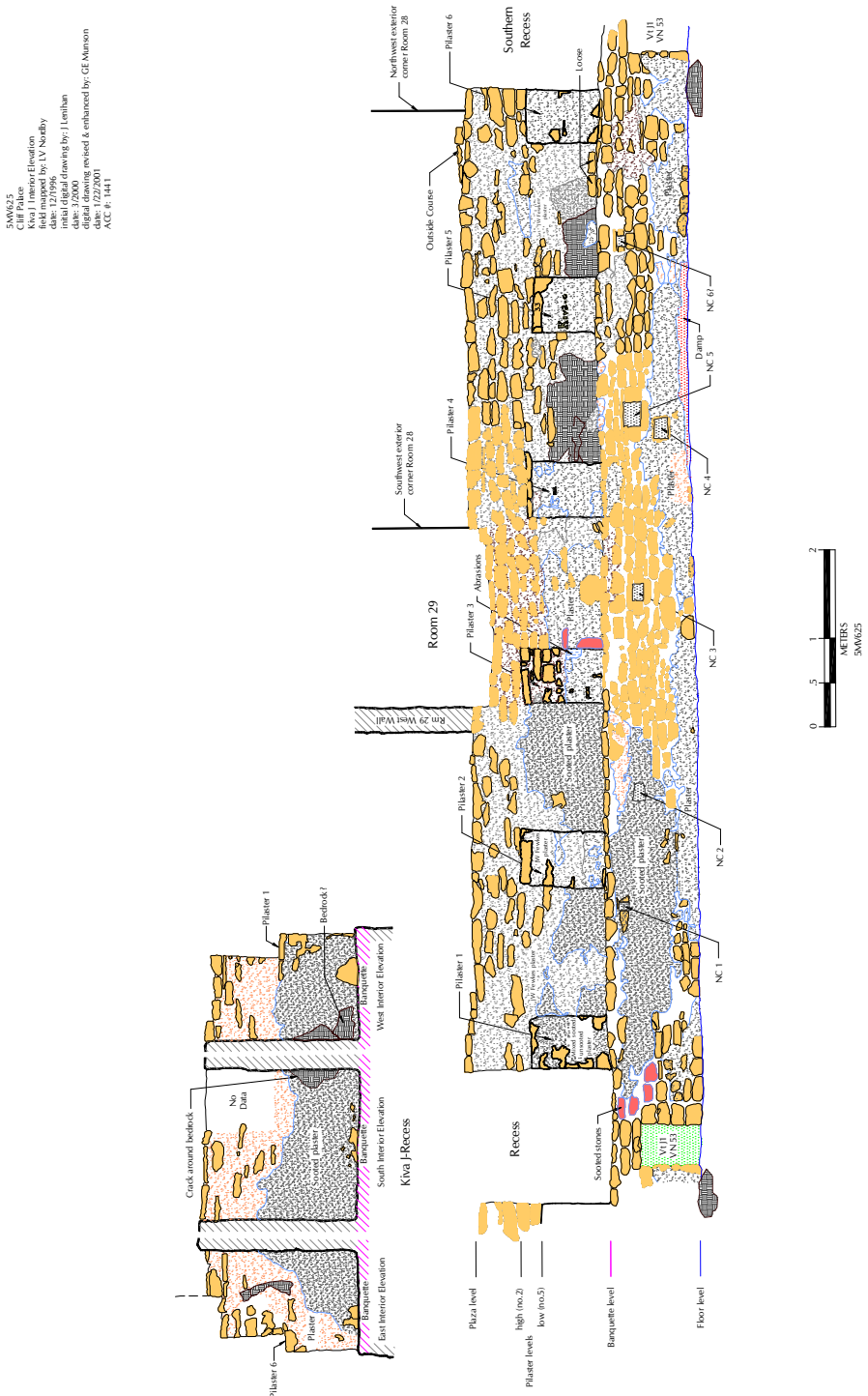

Figure 4.13. Cliff Palace-Kiva J Interior Elevation.

cannot be confidently assigned to any courtyard complex. A narrow pathway along the base of the tower (exterior of Room 36(1)) connects Open Areas J and K, but photography taken prior to excavation shows that this pathway is a modern invention.

As field work continued on the exterior of Rooms 36(1) and 126(2), we made an important discovery. Immediately below the top course of the exterior, we found a double retrofit socket. Coupled with detailed examination of the plaster, this finding proves that the area immediately south of the round tower was once occupied by a two-story unit These two rooms have been enumerated as Rooms (1) and (2). Placement of this unit probably occurred very late in the history of Courtyard Complex J. It is likely that the exterior of the "round tower," Rooms 36(1) and 126(2), was not plastered until after the two rooms were in place. Ultimately, this also demonstrates that Open Area 4(2) had a west wall.

The eastern facade of Open Area J is formed of the exterior western walls of Rooms 25, 26, and 27. The southern facade was formed in part by the exterior northern walls of Rooms 21(1), 22(1), 23(1), 97(2), and 98(2). The western portion of this facade was formed in part by the exterior wall of Rooms 18(1) and 124 (2).

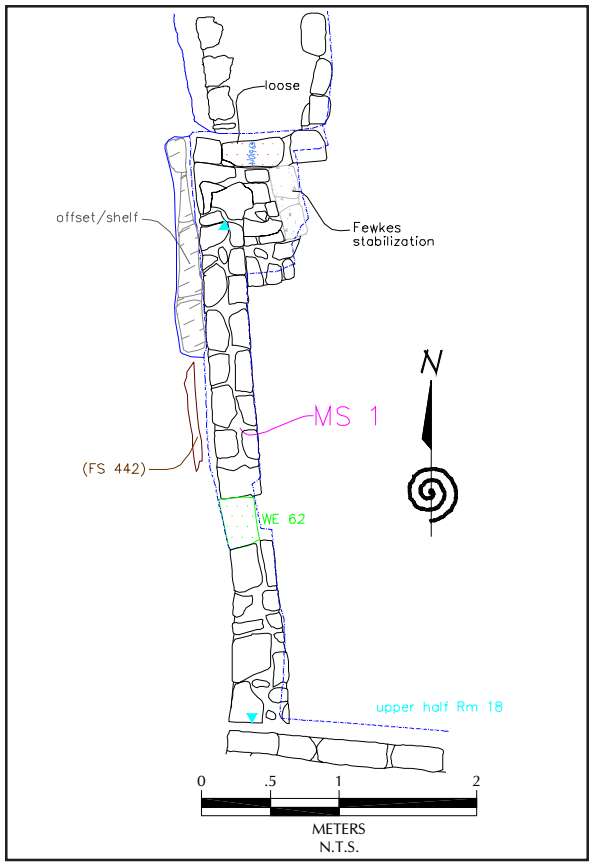

Figure 4.14. Miscellaneous Structure 1, the parapet wall along the western side of Open Area J.

Miscellaneous Structure 1 (Figure 4.14), the parapet wall, defines a portion of the western facade of Open Area J. The remaining part of the western facade is now open to the rooms situated on a much lower level and is not enclosed in any way. Access to Open Area J may have been gained from the rooftops of rooms to the west, or by using a ladder placed in Open Area 30.

Excavation and Preservation History

Open Area J was exposed as Fewkes first excavated Cliff Palace, and the area served a fundamental role in the interpretation of the site. Along with Room 11(1) and those above it, Open Area J is probably among the most frequently photographed units at Cliff Palace. In part, this is because the round tower (photogenic Rooms 36(1) and 126(2)) is close by. Fewkes (1911:27) considered this unit within the Tower Quarter of the site, and discusses the preservation work:

> the plazas were liberally covered with Portland cement, and runways were constructed to carry off the surface water into gutters by which it was diverted over the retaining walls to fall on the rock foundations beyond [Fewkes 1911:25].

There were some repairs to wall tops of those units that surround Open Area J, although early photographs and our field observations suggest that much less preservation work was carried out than has previously been believed. In some cases, facades of the open area were modified as defects were repaired.

Open Area J Summary of Architecture and Condition in 1995

General Description and Major Dimensions

The wall construction of Open Area J has been described with the surrounding units. Walls were generally of single stone construction. Most of the information of relevance here is the nature of the plaster treatments to the exteriors of those enclosed spaces, and the nature of the finished masonry exteriors.

Exterior masonry around Open Area J is generally much better finished than the interior wall faces of those same units. Large, regularly shaped blocks are most often used, and pecked finishes are frequent, with occasional grinding. The exception to this ambience is the eastern facade, where Rooms 25, 26, and 27 were plastered, often over the top of unshaped stones.

All wall facades have at least some plaster treatment, at least to the height of the lower story roofline. The eastern and southern entryways are surrounded by auras,

generally in a light gray or white color, applied as an embellishment to the underlying pink plaster, which cover the entire wall. Even the basal portion of the "back" side of Miscellaneous Structure 1, which would not be visible from west of Open Area J, has a floor band.

Although preservation is insufficient along the eastern and southern facades to supply much evidence of further wall embellishment, the remnants of painted designs are faintly visible along the eastern side, and incising, perhaps linked to painting, can be observed along the southern side.

The southern side of Open Area J also has plaster that extends up above the sockets that represent the lower story roofline in Rooms 22(1) and 23(1). The extent of the plaster indicates that the exterior wall was adorned by a balcony that ran along the bases of the second story doorways. At the same time, this plaster configuration strongly suggests that this balcony probably did not extend farther west. People living in Room 21(1) did not install a balcony below the doorway of Room 97(2), although they may have been able to step out onto the roof of a single story room located north of Room 21(1).

The overall dimensions of Open Area J are as follows, although the area is irregularly shaped:

Length: 9.5 m E-W

Width: 5.00 to 10.00 m N-S

Enclosed floor area: 61.9m^2

The only sub-features on the walls defining Open Area J are wall pegs, on the north and south walls. The floors defining Open Area J are completely modern in origin.

Condition

Open Area J is in excellent condition. All walls appear stable with a possible exception on the northern side of the unit, where there are several cracks associated with the east wall of Room 29(1). These were repaired by Fewkes and now seem stable. When our work began, the eastern facade opposite Room 27 was damp from leakage occurring during the winter of 1995 and 1996. This dampness was coupled with some mortar exfoliation near the wall top, but the area has since dried out without further repercussion.

Open Area J and Courtyard Complex J: A Summary of the History of Construction and Use

Open Area J is a large plaza surrounded on three sides by well-preserved rooms, some of which are two stories high. It was built in several construction episodes between A.D. 1260 and 1278, but most of its form developed between A.D. 1271 and 1278 when other structures were added to those inherited from a antecedent and hypothetical Courtyard Complex X.

Among the most interesting findings of our project was the discovery of an earlier and somewhat larger kiva (Kiva X) in Open Area J. Kiva J was built within the earlier structure. The evidence of this earlier structure is limited to a single course of building stones arranged in a concentric arc along the southeast side of Kiva J. A large upright slab of bedrock that was probably once incorporated into the wall of this earlier structure is now visible along the east facade of the southern recess of Kiva J.

The implication of this finding is that Kiva J was built after some of the other structural units in Open Area J, mostly Rooms 25-27. Although only a single datable specimen was collected from Kiva J, its date of A.D. 1271L is consistent with the relative dating of abutment patterns in the associated rooms. It is the only direct date from all units in the complex, and is viewed as dating the complex in its nascent form. Units forming the northern wing were added within a year or two of Kiva J construction, and rooms comprising the southern wing were added between A.D. 1275 and 1278.

Open Area J has an interesting and complex history, and holds at least some of the keys for understanding temporal relationships with the surrounding portions of Cliff Palace across most of the southern end of the site. Our project work identified the core architecture and the construction sequence for the south wing and north wing of Courtyard Complex J.

Courtyard Complex J Core Architecture

Two anchoring points of earlier core architecture defined the space into which Courtyard Complex J was originally placed. To the north, the first anchoring point was the two-story circular tower, Rooms 36(1) and 126(2). We think that initially the tower was a freestanding unit to which other rooms in this area of Cliff Palace were added. Every wall that articulates with this tower is attached by abutment. To the south, the second anchoring point is a large rectangular two-story unit, Rooms 20(1) and 125(2). Both of these units are from about the same construction period as Courtyard

Complex J, even though those units can only be dated by indirect evidence between A.D. 1271 and 1273.

Within Courtyard Complex J, Rooms 25, 26, and 27 altogether constitute one of the initial construction episodes. These three rooms were laid out together to a wall height of about 75 cm, and then Rooms 26 and 27 were finished in order, followed by Room 25. The three-room unit was completed from north to south. Interestingly, Room 25, the last room built, is the one with a hearth now. Oxidation plumes in the southwest corner of Rooms 26 and 27 prove that a hearth was once present in each of those rooms. Two wings were added to these three core rooms of Courtyard Complex J in at least two stages.

South Wing: Rooms 23(1), 22(1), 98(2), 21(1), 97(2)

Building toward the open side of the alcove, Rooms 23(1), 22(1), and 98(2) were the first constructs of the south wing of Courtyard Complex J. The ground floor area was simply subdivided by a cross wall into two architectural spaces. Of these, Room 23(1) had a corner hearth and probably served as a living room. Room 22(1) lacks floor features and plaster but does have a single wall niche. Four viga sockets are visible on the exterior of the north wall of Room 22(1). Plaster details indicate that they formed the foundation of a balcony upon which entry was gained to Room 98(2), overlooking Open Area J. Room 98(2) extended above both of the ground floor units, but its overall size was reduced by the alcove wall. Based on our observations of the interior plaster details, some type of short partition wall helped to define the eastern side of Room 98(2), and one wall was plastered.

Rooms 21(1) and 97(2) were next added to the south wing as a single unit, followed by Miscellaneous Structure 1, and perhaps the unit that may have surmounted the foundation stones of Miscellaneous Structure 2. Not only did these additions help delineate space in Open Area J, but they also served to define other units to the south of it. The ground floor unit has a corner hearth, and three walls were plastered. Room 21(1) also has a toehold on the interior, below the entry, and three peg holes. Room 21(1) was used as a living room based on the presence of the hearth. Room 97(2) is one of the few second story units within Cliff Palace with a hearth, also in the northwest corner. However, there was no sooting or oxidation in the room, implying that the hearth was not used. All walls in Room 97(2) were plastered.

The construction of Rooms 22(1), 23(1) and 98(2) evidently followed the construction of Kivas J and K by a couple of years. This southern wing was completed between A.D. 1275 and 1278.

North Wing: Rooms 29(1), 28(1), 99(2), Open Area 14

The north wing was constructed by adding rooms to the exterior east and south sides of Room 36(1) and 126(2). Aside from Rooms (1) and (2), most of this building extended toward the exterior of Room 27. Room 29(1) was added into this space, followed by Rooms 28(1) and 99(2). These units were added to the exterior of Room 27, but did not extend to the back of the alcove. This architectural plan preserved the space now known as Open Area 14. Perhaps the open area was damp from a spring or seep, or perhaps it was left open for refuse. The north wing construction was probably initiated around A.D. 1271, the construction date of Kiva J, continuing for a couple of years.

Accessibility to Open Area J would have been restricted in the same ways it is now. Entry would have been via the entryway in Miscellaneous Structure 1, which links the complex with lower elevation units (Fewkes terms these areas “terraces”) situated to the west. Rooms 37(1) and 127(2) probably had also been built in A.D. 1271 or 1272 as part of Courtyard Complex K, which developed simultaneously with Courtyard Complex J. Room 36(1) forms an anchoring architectural point for that unit, but is assigned to Courtyard Complex K because it opens toward Kiva K. The narrow bedrock pathway that now runs along the western side of Room 36(1) did not exist when Courtyard Complex J was in use. Interconnection with Courtyard Complex K would have been across the second story rooftops of units to the west of these two units.

How the Rooms Were Used: Room Function

Courtyard Complex J had five living rooms, five storage rooms, two ceremonial space/living room “kivas”, two open areas, two miscellaneous structures and three rooms of indeterminate function. We used characteristics such as room size, the presence of storage sub-features (niches, wall pegs or peg holes), presence of a hearth, and the nature of plaster treatment to assess the room functions and use. Courtyard Complex J took shape starting as early as A.D. 1260, but most intensive construction occurred between A.D. 1271 and 1278.

Living Rooms: Room 21(1), Room23(1), Room 25, Room 26, Room 27

We designated an architectural space a living room if it had a hearth or evidence of heating/cooking sub-features: Room 21(1), Room 23(1), Room 25, Room 26, and Room 27, are here interpreted as living rooms, in spite of the fact that some are quite small and have other

features that seem at odds with the living room interpretation.

Following the work done by Dean and Nordby in Arizona, we thought that only granaries and storage rooms had been closed from the exterior. However, in Courtyard Complex J, all the doors for which there was closure evidence were sealed from the exterior. Our storage rooms could not be distinguished based solely on the presence of exterior sealed doorways. In Chapter 7, we further evaluate additional doorway attributes to subdivide different room classes. Such attributes include the Height-Width Index (HWI), sill heights, and the presence of step stones or toeholds.

Storage Rooms: Room 97(2), Room 22(1), Room 28(1), Room 99(2), Room 29(1)

We based our determination of storage room use on the size of the rooms, plaster treatments, and the presence of niches and wall pegs. Room 97(2), Room 22(1), Room 28(1), Room 99(2), Room 29(1) had attributes that identified them as storage rooms. Two of the storage rooms were the largest rooms in Courtyard Complex J with several wall pegs or peg holes, and generally high overhead values. These units, Rooms 28(1) and 29(1), could have functioned as large storage units for storage of specialized ceremonial gear.

Indeterminate Rooms: Room 98(2), Room (1) and Room (2)

Room 98(2) above a room of the southern wing did not supply enough evidence to permit a function to be assigned. There was no evidence that hearths once existed, but most of the walls had collapsed if they extended much higher than they are now. Based on architectural details, the other two rooms (Room 1 and Room 2) are known to have been present at the west end of the north wing, but no more information is known.

Open Areas

Open Area 4(2) was located on a rooftop, with a good view of whatever may have been ongoing in Open Area J. Enclosed on three sides, the surface finishes show elaborate care. There are no utilitarian sub-features in this unit.

Chapter 5

Courtyard Complex M

Courtyard Complex M consists of 19 architectural spaces and structures in Cliff Palace built between A.D. 1206 and 1280 (Figures 5.1 and 5.3). Each space has its own history of excavation and preservation. As a result of field work we can also describe the construction of the walls and floors and suggest how each room was used.

We originally perceived Courtyard Complex M as a series of architectural spaces that were closest to Kiva M. We now think that some rooms within Courtyard Complex M might be related to nearby kivas that lack clear-cut examples of residential space. When we considered the entire site of Cliff Palace, it was clear that Rooms 49(1) through 52(1), 60(1) through 63, 148, and the low attic-like rooms atop some of them (e.g. Rooms 101(2) and 102(2)) might be associated with Kivas L, M, or N. The abutment pattern of these attic-like rooms raises the possibility that they were used by households belonging to several related clans.

In this chapter, we have retained the organizing concept of a courtyard complex of rooms grouped with Kiva M. More work on this part of the site may modify this view. The following architectural spaces are associated with Kiva M, followed by, the room function and date of construction:

Room 39(1), living room, about A.D. 1268

Room 40(1), storage room, about A..D. 1268

Open Area 32(2) (above Rooms 39(1) and 40(1)), access to Open Area 14, about A.D. 1268

Room 41, granary, before A.D. 1268

Room 42, granary, before A.D. 1268

Room 43, probably an open living room, A.D. 1268

Room 44 (1), living room, A.D. 1268

Room 101 (2), storage room, after A.D. 1272

Room 45 (1), living room built before A.D. 1268, converted to non-food storage uni in that year

Room 102 (2), storage room, after A.D. 1272

Room 46, granary, about A.D.1268

Room 47 (1), granary, A.D. 1272-1280

Open Area 5(2) (above Room 47(1)), work area with hearth, A.D. 1272-1280

Kiva M, ceremonial/living room, A.D. 1268 or 1269, ventilator tunnel repaired A.D. 1278

Figure 5.1. Overview of Open Area M.

Open Area 6, work area with hearth, and Miscellaneous Structure 3 (wall), before A.D. 1268

Open Area M, social gathering area, A.D. 1268 or 1269

Miscellaneous Structure 4 (wall), partition between Open Areas K and M, about A.D. 1271

Room 100(2), storage room, A.D. 1272 1280 (Room 48(1), the unit below, was part of Courtyard Complex N)

Room 39(1)

Excavation and Preservation History

Room 39(1) (Figure 5.2) was identified by Nordenskiold as Room 59 (1893: facing page 60). It was excavated by Fewkes (1911). He thought that it was a living room with "no special peculiarities." His map indicates that he thought it had an enclosed second story. There is now no evidence of that room. Fewkes' primary interest in Room 39(1) was in the preservation challenges that it posed. He thought the north wall was unstable, and he repaired the Kiva M wall by adding a buttress to Room 39(1) that is still visible.

When J. A. Lancaster was working for Earl Morris to stabilize the north wall in the 1930s, he removed steel braces, presumably installed there by Fewkes. This bracing system seems to have consisted of a concrete eyebolt anchor buried in the floor, with a steel rod extending at an angle upward toward the north wall. At the other end, in both Room 39(1) and Room 40(1), two holes were apparently drilled into large building stones. These holes were angled toward the ground, and probably were intended to contain an eyebolt that could have been connected to the concrete pad with a turnbuckle. If this entire hypothetical apparatus was ever installed, Lancaster removed it. There is no evidence that even the eyebolts were installed.

Other work that was done in the 1930's is described by Chandler (1989:41). It included the placement of wooden wedges into the exterior face of the north wall, some remudding of the exterior, and the installation of two newly cut beams into each room to tie the north wall back to the south wall. The partition wall between Rooms 39(1) and 40(1) was capped. The portland cement used for this work was overpointed with soil mortar. It is possible that rebar was also used across this cap. This same wall was repaired in the summer of 1984 (Chandler 1989:41), probably by Ron Crawford.

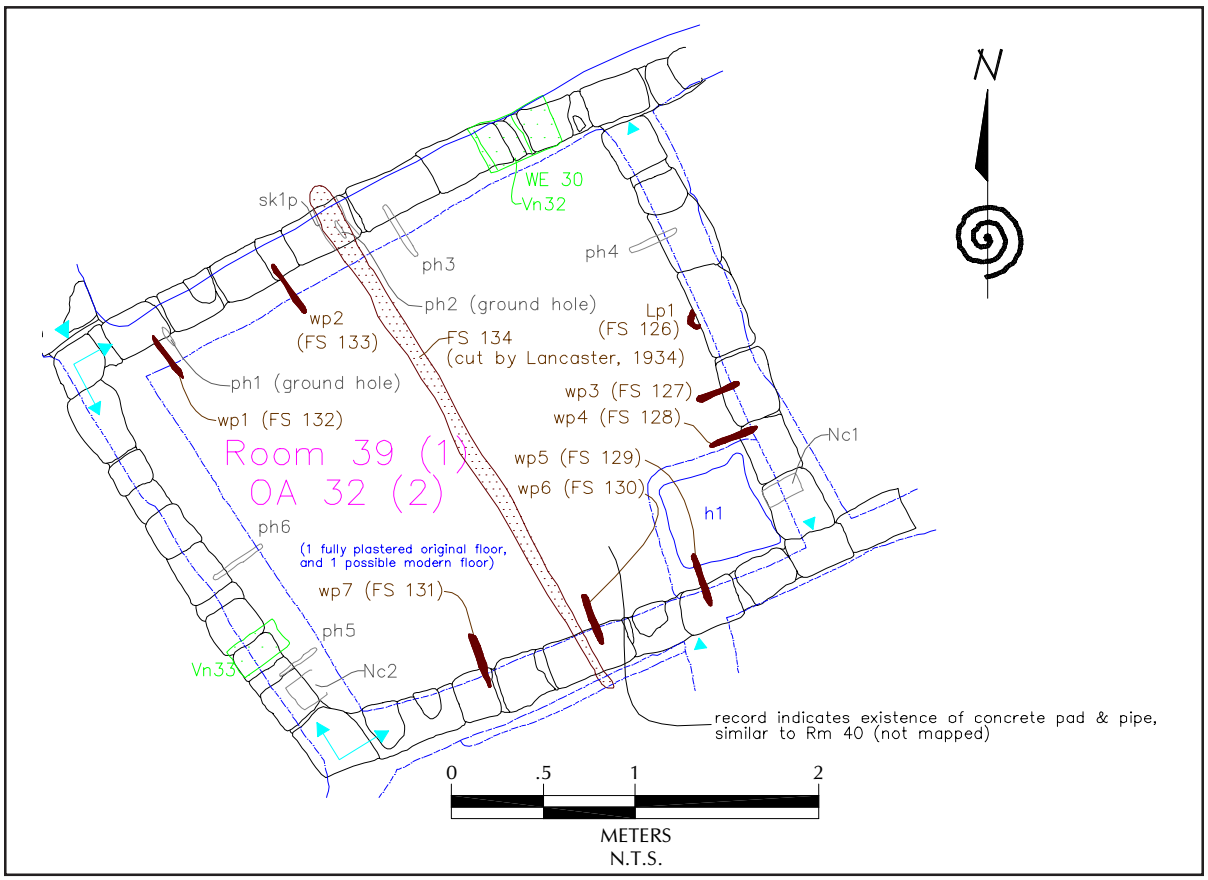

Figure 5.2. Plan View of Room 39(1) and western portion of Open Area 32(2).

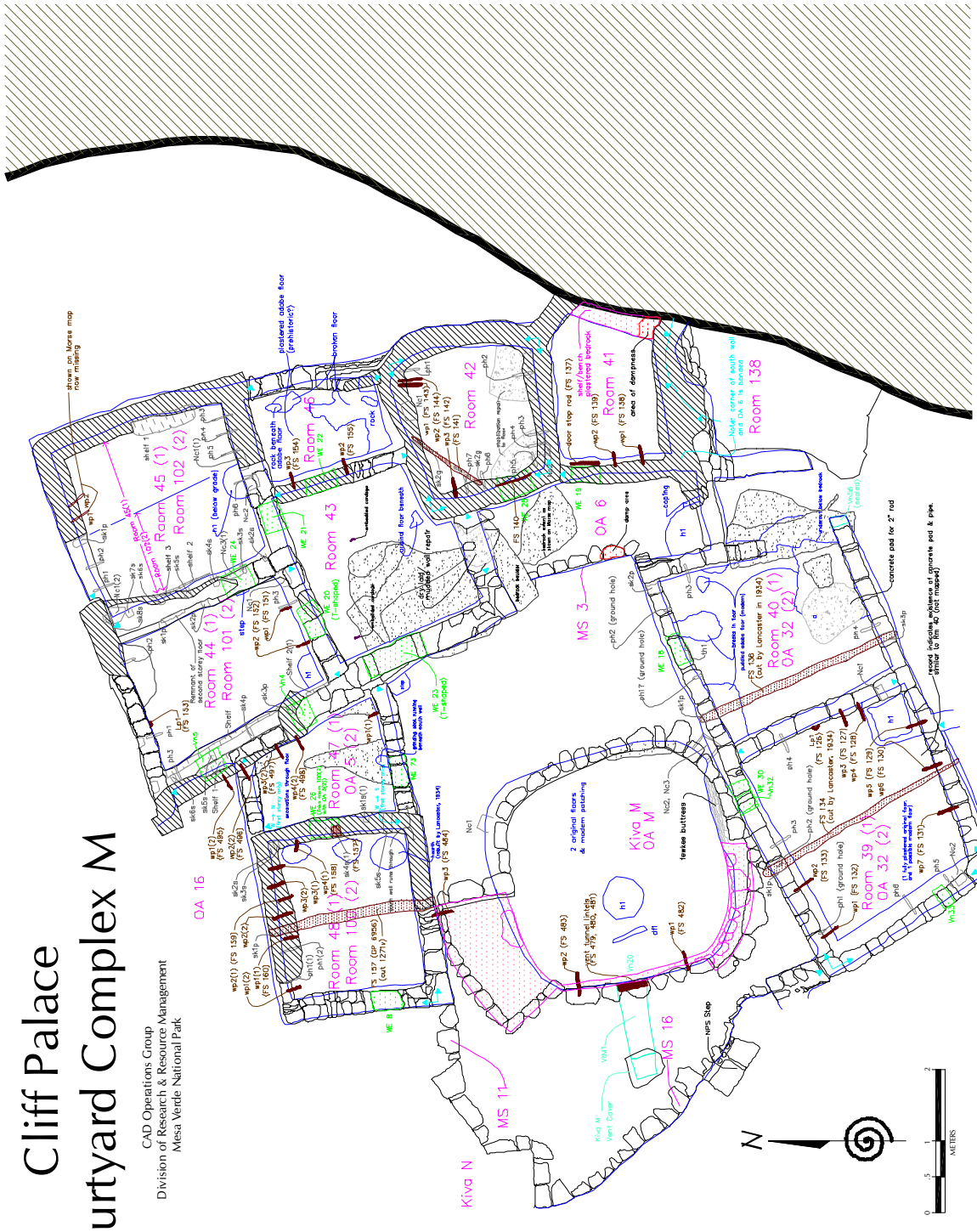

Figure 5.3. Plan View of Courtyard Complex M.

Room 39(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 39(1) forms a large rectangle along southern side of Open Area M. It has the following dimensions:

Length and axis: 2.70 m E-W

Width and axis: 2.29 m N-S

Roofed floor area: 6.18 m^2

Headroom: 1.85 m

Walls

All walls of this unit are basically original, with only the top portions modified by stabilization. The original walls (Sector 1) are semi-coursed masonry of single stone thickness. Patches were made by Fewkes, Lancaster, or Crawford.

Floor

The floor of Room 39(1) was cleared to determine whether floor sub-features were present, but none were found other than the partial exposure of the concrete apron. The original floor had been removed in order to install this preservation device. After Lancaster removed anything that may have been there, the device was covered over with a modern adobe floor.

Condition

All walls of Room 39(1) are stable, and none of the moisture found toward the rear of the alcove is present within the room. In addition, because the location of Kiva M poses entry challenges, and the original floor was covered with a modern intervention, the original floor has minimal damage from foot traffic.

Room 39(1) Architectural Context: History of Construction and Use

Room 39(1) was built around A.D. 1268 along with Room 40(1) as part of a large rectangle that was subdivided by adding a partition wall. Although our original assessment of this cross wall was that it had been bonded, it is likely that the bond was created by Lancaster when he put in the wall tie. Room 39(1) was constructed after Rooms 41 and 42, based on the abutment of the short stub that attaches Room 39(1) and Room 40(1) to the exterior of Room 41. In turn, Room 38(1) to the south, and Miscellaneous Structure 4 are both later construction that was attached to Room 39(1). Open Area 32(2) was located on the roof shared by Room 39(1) and 40(1).

As part of this project's wood inventory, tree-ring samples were collected from this room. Unfortunately, the only specimen that provided a date was FS 134, a juniper cut in 1933 to supply the tie between north and south walls.

Room 39(1) was used as a living room, based on the presence of a well-formed and slab-lined hearth. There is some sooting of the walls, but not a lot. All four walls have monochromatic pink (7.5YR 7/4) plaster with some sooting below it. The room may have changed function from living room to some other use. There are two niches, two ventilation ports/windows, a horizontal loop, and 11 wall pegs/peg holes. Two additional peg holes are those that were ground into the building blocks, probably in the modern era, to receive eyebolts. There is a toehold below the doorway (Wall Entry 30). The door was large (HWI 192) and was sealed from the exterior. A digging stick was recycled as a door stop rod.

Room 40(1)

Excavation and Preservation History

Room 40(1) (Figure 5.4) is not specifically mentioned by Fewkes, although it probably shared the same preservation problem as Room 39(1). The presence of Kiva M probably affects the stability of the north wall of Room 40(1). Hypothetically, the eyebolt strategy suggested for Room 39(1) was at least planned for this room. We exposed the concrete apron installed for the stabilization while cleaning the floor. In this case, the north wall stones selected for drilling were on either side of the doorway. In any event, Lancaster removed whatever may have once been there in the 1930s, and placed the same type of newly cut tie beam that was used in Room 39(1). This was again supplemented by wedging the exterior of the north wall, and remudding. Room 40(1) was termed Room 58 by Nordenskiold (1893: facing page 60).

The partition wall between Rooms 40(1) and 39(1) was capped. The portland cement used for this work was overpointed with soil mortar. It is possible that rebar was also used across this cap. The east wall was capped and the end stabilized at that same time. In 1984, Crawford may also have remortared a patch at the base of the northern end of this wall, since it receives some moisture. If so, it seems that he used a calcium aluminate soil cement mortar to make the patch Chandler (1989:42).

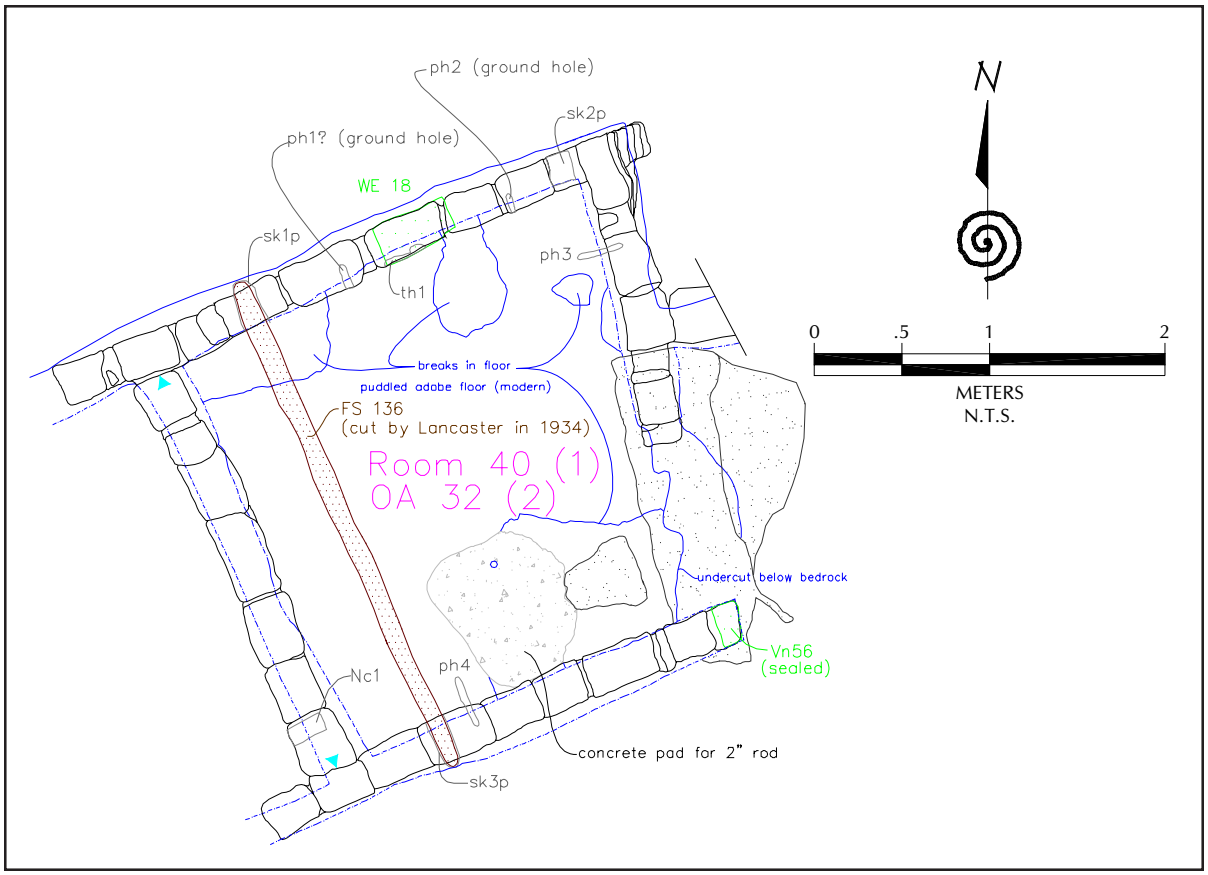

Figure 5.4. Plan View of Room 40(1) and eastern part of Open Area 32(2).

Room 40(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 40(1) is a large quadrilateral located along the southern margin of Open Area M. Dimensions are:

Length and axis: 2.42 m N-S

Width and axis: 2.25 m E-W

Roofed floor area: 5.44 m^2

Headroom: 1.85 m

Walls

All walls of Room 40(1) are original, with only the top portions modified by stabilization activity. In each case, Sector 1 comprises the original wall, and all walls are of single stone thickness, and comprised of semi-coursed masonry. Patches were done by Fewkes Lancaster, or Crawford. This room had no original plaster treatment.

Floors

The exposed floor was swept to locate floor sub-features, and the concrete apron was again encountered, covered with windblown debris. This time, materials above the apron were removed entirely. A modern adobe floor had been installed over the concrete, probably by Lancaster's crew. The covering prevents damage to any original that remains.

Condition

All walls of Room 40(1) are stable, although there has been some moisture damage to the northeast corner. Water dripping from the alcove during the winter of 1995 and 1996 entered the ground in the elevated Open Area 6 and moved through the ground to the base of the northeast corner or Room 40(1), where it evaporated. Since Room 40(1) has no interior plaster, damage to the inside was minimal.

The modern floor of Room 40(1) was impacted by water removal operations during the winter of 1995-1996, because the room provides the easiest access to Open Area 14, an area that was hard hit. Bucketeers generally entered Room 40(1) through Wall Entry 18, which crushed

the floor underfoot. Some of the damage to the floor also came from visitation when this portion of the site was accessible to visitors.

Room 40(1) Architectural Context: History of Construction and Use

Room 40(1) was built around A.D. 1268 along with Room 39(1) as part of a two-room unit. A larger rectangular space was divided by adding a cross wall. Taken together, Room 40(1) and 39(1) had a large rooftop that probably served as some type of storage space. When Room 40(1) and Room 39(1) were added to the outside of Room 41, they defined the perimeter of Open Area M. Ultimately, Miscellaneous Structure 4 was added, to subdivide Open Area M from Open Area K. Although it would have been possible to enter Open Area 14 from Open Area K through the area that later became Room 38(1), construction of Room 38 would have ended that accessway. Room 38 was attached to the outside of Room 39(1), an event that probably took place in A.D. 1271 or later. Rooms 39(1) and 40(1) must have been built prior to A.D. 1271.

Room 40(1) probably served as a storage room. At first, it seemed likely that Rooms 39(1) and 40(1), of similar size, would have a similar function as living rooms. However, Room 40(1) does not have any of the features normally associated with living rooms. It does have a ventilator (sealed) and several wall pegs/peg holes. It has a door (Wall Entry 18) through the north wall, with an interior toehold. The door is fairly tall (HWI 218.00) and seals from the exterior.

Room 41

Excavation and Preservation History

Room 41 (Figure 5.5) was also designated Room 41 by Nordenskiold (1893: facing page 60). This room was excavated by Fewkes (1911) near the turn of the century, but he only observed that the walls were well preserved and the top of the cave served as the roof. Along with Room 42, Room 41 was "occupied by campers while engaged in rifling the ruin of its contents" (Fewkes 1911:45). Because all of the walls are intact, there was probably very little debris inside the room, making it an attractive temporary campsite, although the room is relatively small, and probably somewhat cramped. For this reason, we suspect that Rooms 43, 44(1) and 45(1) were the units that were actually the temporary quarters of early relic hunters.

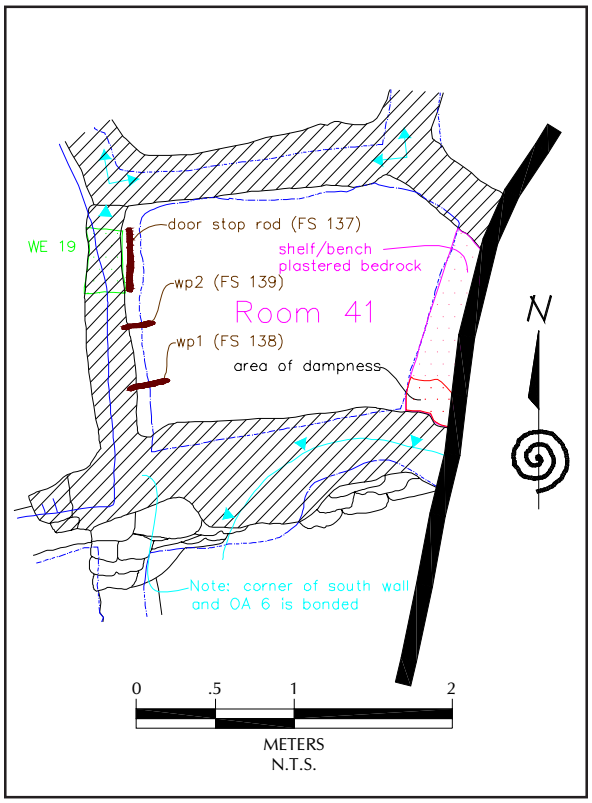

Figure 5.5. Plan View of Room 41.

Room 41 Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 41 forms a sub-rectangular unit built against the alcove wall, wedged in between the alcove ceiling and floor and other architectural units. Along the eastern wall, formed by the alcove, is a low bench or shelf that remains plastered. Dimensions of Room 41 are:

Length and axis: 1.84 m E-W

Width and axis: 1.40 m N-S

Roofed floor area: 2.58 m^2

Maximum headroom: 1.75 m

Minimum headroom: .60 m

Walls

A thick coating of extruded smoothed plaster covered the walls so the building stones are not visible. On the inside, the plaster is so thick that abutments cannot be seen. There is evidence in the exterior northwest corner to suggest that Room 41 was added against the southern

side of Room 42. The eastern wall is formed by the alcove rear.

Floor

The floor is composed of unmodified bedrock, without any floor sub-features. There are no grinding slicks or other indicators of use prior to construction as there are in some of the other parts of Cliff Palace.

Condition

Room 41 is in pristine condition, with all plaster unmodified. If anyone stayed in the room during the modern era, they left no evidence.

Room 41 Architectural Context: History of Construction and Use

Room 41 was inserted into available space between Room 42 and Room 138 before A.D. 1268. Room 41 and 42 are the same size with similar features. Although the interior of Room 41 is too heavily plastered to reveal much about the construction sequence associated with Room 42, the exterior northwest corner shows that Room 41 was added to the outside of Room 42.

Immediately to the south of Room 41 is Room 138, the current designation for the unit that Fewkes thought was a "crematorium" (Fewkes (1911: 38-39). Room 138 is a heavily burned unit that contained fragments of burned bone upon discovery, and actually appears associated with Open Area 14, rather than Courtyard Complex M. We think that the north side of Room 138 was simply incorporated into the southern wall of Room 41, although no juncture or abutment is now visible.

Since Room 41 and Room 42 jointly form part of the eastern facade of Open Area M, it is likely that they were related to construction of Kiva M. We have a single tree-ring cutting date from Kiva M that is related to a repair in A.D. 1278, well after the kiva and associated rooms were probably built.

With its small size, rear alcove location, and heavy plastering, Room 41 seems likely to have served as a granary (Dean 1969; Nordby 1980). Room 41 also has a low, wide doorway (Wall Entry 18, HWI 181) that seals from the exterior. The room contains two wall pegs, a bench like shelf, and a small second elevated shelf.

Room 42

Excavation and Preservation History

Room 42 (Figure 5.6) was excavated by Fewkes (1911:45). It was once the refuge of early campers and relic hunters. Besides the excellent state of preservation, Fewkes only mentions a stepping stone below the exterior doorway of the room. Room 42 has no recorded episodes of past stabilization activity, but below and slightly south of the doorway on the interior is a patch typical of the Fewkes era. This patch does not extend all the way through the wall. The room was designated Room 40 by Nordenskiold (1893: facing page 60).

Room 42 Summary of Architecture and Condition in 1995

General Description and Major Dimensions

The walls of Room 42 reach the alcove ceiling, as the unit is placed between bedrock ceiling and floor at the rear of the alcove. The ceiling is heavily sooted, but the walls are not. All interior wall surfaces are thickly plastered. The dimensions are:

Length and axis: 2.00 m E-W

Width and axis: 1.90 m N-S

Roofed floor area: 3.80 m^2

Maximum headroom: 2.26 m

Minimum headroom: 1.12 m

Walls

Although the walls of Room 42 are completely covered with plaster, they are undoubtedly of masonry, and compare favorably with those of single stone thickness elsewhere. The walls are unsooted.

Floor

The floor of Room 42 is composed of unaltered stone throughout, and there are no floor features. Stabilization repairs were made by either Fewkes or Lancaster in the southeast and southwest corners. We think it is more likely that Lancaster did the work.

Condition

Room 42 is in pristine condition and totally stable. The only alteration to the interior of the unit is along the north wall and northern portion of the east wall where both

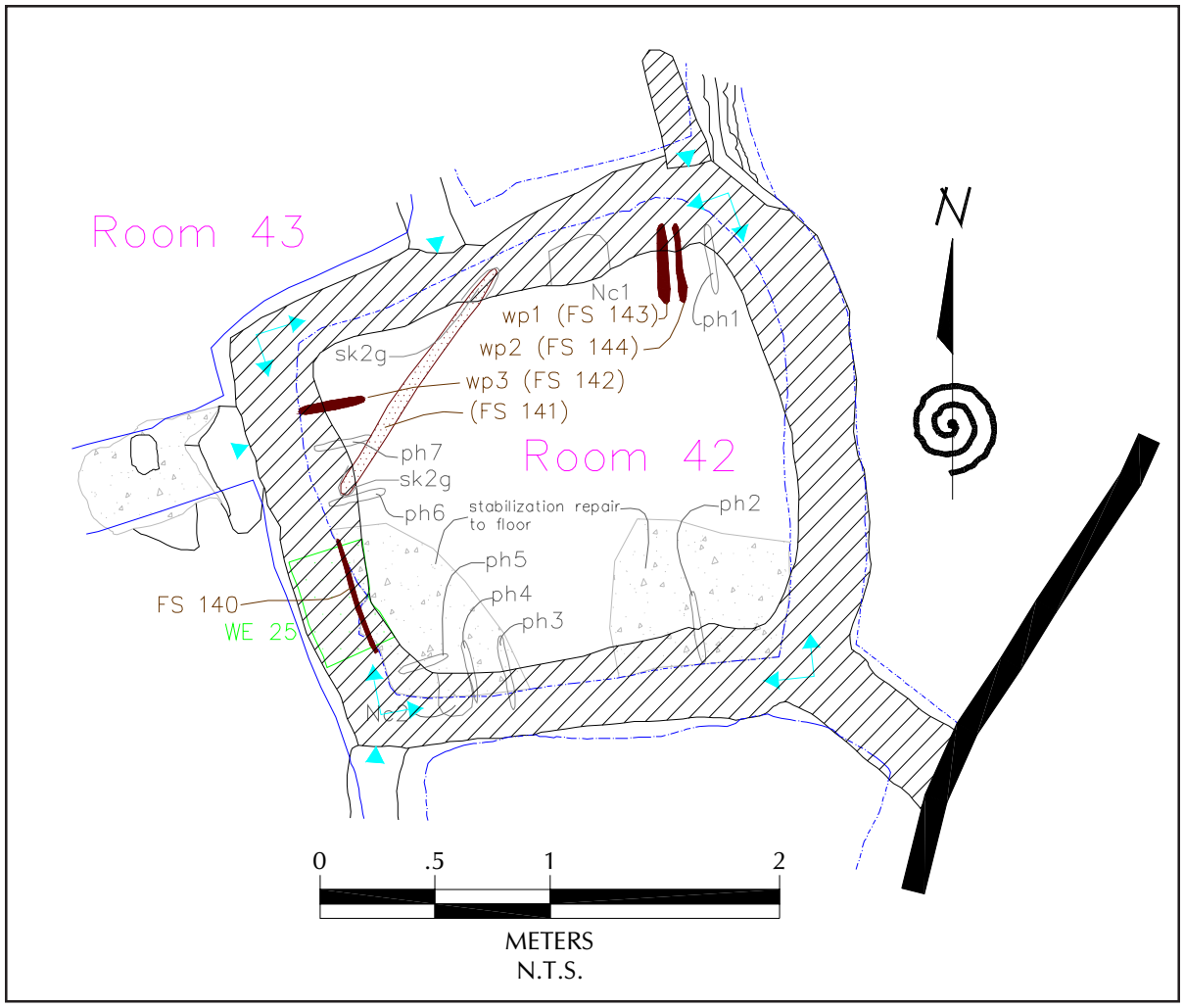

Figure 5.6. Plan View of Room 42.

areas have lost the plaster along the basal 5 to 10 cm. This damage results from higher soil levels on the exterior of each affected wall. Any moisture from areas around the room tends to move into the room and as it evaporates the plaster exfoliates.

Room 42 Architectural Context: History of Construction and Use

Room 42 was probably built before A.D. 1268 as a granary, along the eastern side of Open Area M, an assertion based upon the small size, heavy plastering, and exterior doorway seals. Room 42 is core architecture, and all other structures around it attach to the outside, probably including Room 41. The wood samples from Room 42 did not yield a tree-ring date.

Room 43

Excavation and Preservation History

Room 43 (Figure 5.7) was labeled Room 39 by Nordenskiold (1893: facing page 60). It was excavated by Fewkes (1911), who lumped it into his discussion with Rooms 44 and 45.

> The cluster of Rooms numbered 43 to 45 have well constructed walls, but they have been considerably mutilated. Pegs from which, no doubt, objects were formerly hung, project from the smoothly plastered interior walls of one of these rooms [Fewkes 1911:45].

Room 43 has no wall pegs or peg holes (Room 45 does have the pegs). The mutilation to which Fewkes refers could be in Room 43, since a section of the southern wall has fallen or been pushed out, and a sector of dry-laid mudded masonry installed. The mudding is limited

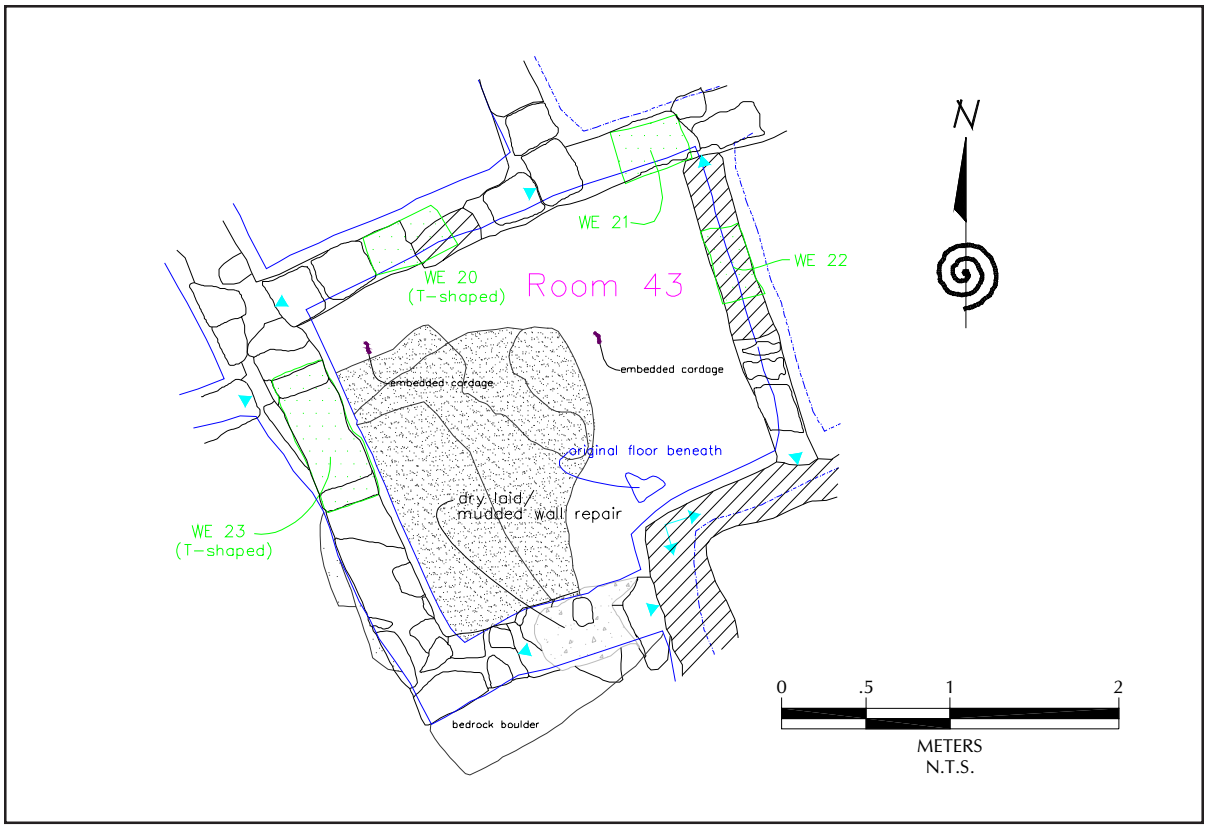

Figure 5.7. Plan View of Room 43.

to the interior facade. This may have taken place during the modern era, or it may have been a prehistoric repair.

We think that all walls are mostly original except for the resetting of an upright stone in the door and Fewkes capping of the west wall (Chandler (1989:45). An upright stone along the southern jamb of Wall Entry 23 was reset in tinted portland cement. By a process of elimination, we think the work was done by Al Decker. The use of tinted portland cement fails to conform to the Lancaster or Fewkes signature of using mostly unamended soil mortar. It is unlikely the work was done by Crawford because he was working with an unspoken moratorium against the use of portland cement and used a calcium aluminate soil cement as far as is now known

Room 43 Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 43 was once part of a much larger space that was subdivided. There is no evidence that Room 43 was ever roofed. It was built atop a bedrock ledge or boulder toward the rear of the alcove. The exterior walls formed part of the eastern facade of Open Area M.

Maximum length and axis: 2.27 m N-S

Width and axis: 2.20 m E-W

Roofed floor area: 4.99 m^2

Maximum headroom: 2.65 m

Minimum headroom: 1.70 m

Walls

Probably because it was once an open area, Room 43 has a complex history that is reflected in eight wall sectors:

North Wall, Sector 1: the exterior south wall, Room 45(1)

North Wall, Sector 2: the exterior south wall, Room 44(1)

East Wall, Sector 1: the exterior west wall, Room 46

South Wall, Sector1: the exterior north wall, Room 42

South Wall, Sector 2: the western portion

South Wall, Sector 3: the basal portion of the dry-laid mudded repair

South Wall, Sector 4: the upper portion of the dry-laid mudded repair

West Wall, Sector 1: the original portion of the double stone west wall.

Some portions of these walls are heavily plastered and sooted. There are no wall attachment scars or ghost lines on the alcove ceiling, and no roofing sockets in any of the walls.

Floors

Room 43 was built atop bedrock boulders or a ledge. The floor was swept to identify the location the hearth that produced sooting of all the plastered surfaces, but none was encountered. No other features were found, and it is likely that the original floor is no longer present in this structure. Interspersed in the adobe material were examples of cordage, which may have been hair. This material may be horsehair from modern Euro-American incursions in the site.

The instability of the floor surface in Room 43 was demonstrated when boot prints were easily pressed into the mud below Wall Entry 21 to Room 45(1) when water in Room 45 was being bucketed out during the winter of 1995-1996. Although a sluice system was erected to avoid walking in Room 43, when it froze during cold weather the ice had to be removed manually from the room using the entry to Room 43 for access.

Condition

The floor surface is not stable but the walls of Room 43 are totally stable. There is minimal damage to stone, mortar, or plaster damage from the water seepage during our project.

During the winter of 1995 and 1996, when seepage into Rooms 44(1) and 45(1) was very pronounced, damage to Room 43 was incidental to removal of water from Rooms 44(1) and 45(1), which often amounted to 25 to 30 gallons per day. In terms of the masonry walls, the northern wall is the only one that appears to have suffered much damage, with some dripping occurring above Wall Entry 20. As soon as this was noted, the drops were collected in a pail placed atop the wall, and this particular leak soon subsided.

Room 43 Architectural Context: History of Construction and Use

Room 43 has one of the most interesting histories of any units studied so far. It began as a large open area that included Room 44(1) and perhaps Room 46. This unit would have encompassed an area of at least 9 m^2, and perhaps as much as 12 m^2. It would also have had a plastered facade along the eastern side, extending along the exterior west wall of Room 45 across the exterior west wall of Room 46. There was a T-shaped doorway into Room 45(1), and a T-shaped entryway into Room 43. Farther to the east, rectangular entryways provided access to Rooms 45 and 46.

It seems unlikely that Room 43 was ever roofed; suggesting that what has been termed a “room” was actually an elevated courtyard with a plastered eastern facade. The plaster on the exterior of Room 45(1) runs beneath the abutment of the cross wall that divides Rooms 43 and 44(1). This wall may have been constructed as early as A.D. 1206, based on the dating of the lintel of Wall Entry 20.

In Room 43, there are five lintel poles in the doorway (Wall Entry 20), which surprisingly had not been previously sampled for tree-ring dating. As part of our project, we submitted these samples and four provided cutting dates: A.D. 1206 (the inner lintel poles), and A.D. 1268 (the outer lintel poles). In each case the pith date for each of the two matching poles was the same. This suggests that each of the two poles was once a single tree that was cut in two and installed as a pair. The interpretation of these data are that either the original construction date of the north wall of Room 43 was A.D. 1206, and that it was repaired in A.D. 1268, or that earlier wood was used when the doorway was built, in A.D. 1268. Construction dates nearby support the later date .

Room 44 (1)

Excavation and Preservation

Room 44(1) (Figure 5.8) appears on Nordenskiold’s map (1893: facing page 60) as Room 35. Room 44(1) was excavated by Fewkes (1911:44). He noted that it had well-plastered walls and several wall pegs. Although shown as a single-story room on Fewkes’ map, the unit actually has a low second story above it, as do some other of the rooms in this section of Cliff Palace. Chandler’s (1989:46) research indicates that Fewkes stabilized an area above a socket in the north wall of Room 44(1).

Fewkes stabilization work is not now visible. The area has been subjected to severe water damage throughout the past century and was stabilized in response to the deterioration. Jack Smith, Park archeologist, spent some time looking at the area between 1980 and 1983, commenting that this area was “badly broken midway.”

In 1984, Smith’s concerns were addressed by the Park Rehabilitation and Improvement Program (PRIP), which

supplied funding to repair a section of the north wall. Ron Crawford was in charge of the crew that did the work, and he seems to have used a soil cement, probably a mixture of calcium aluminate cement and mortar colorant. This material absorbs and transmits water more readily than portland cement mortars and thus would not force moisture into the original fabric or stones. The cement has an earthen tone color, which unfortunately did not match the original mortar at all. The color of this material now is reddish-yellow (7.5YR 6/6) that does not match any of the original mortar types. Surface color of the original mortar in Room 44(1) is pink (7.5YR 7/4), although some gray tones (10YR 6/1) are visible when this surface sloughs off. This may be due to oxidation of surface materials. This material was highly friable when encountered during the winter of 1995-1996, mostly because it does not react favorably to the freeze-thaw cycle.

Room 44(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 44 (1) was built near the rear of the alcove to the northeast of Kiva M. It is in a slightly elevated setting, and the rooftop attic (Room 104(2)) above it actually is roofed in turn by the alcove ceiling. Room 44(1) room is entered via a T-shaped doorway from the south, and in turn supplied access to Room 45(1) by a second T-shaped doorway. The second doorway was ultimately sealed and transformed into a rectangular doorway with a niche or toehold below it on the Room 45(1) side. Dimensions are as follows:

Length and axis: 2.48 m N-S

Width and axis: 1.74 m E-W

Roofed floor area: 4.17 m^2

Headroom: 1.90 m

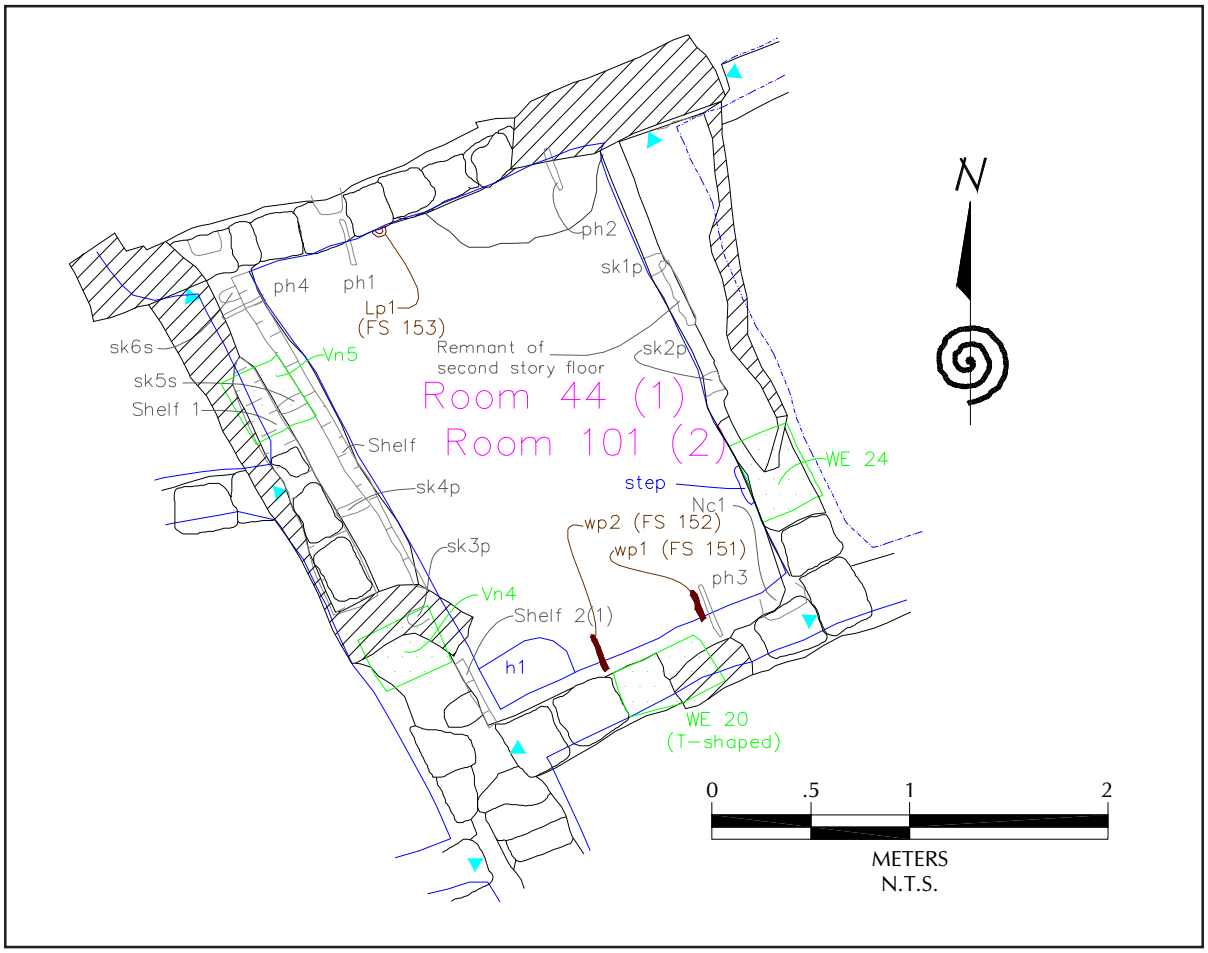

Figure 5.8. Plan View of Rooms 44(1) and 101(2).

Walls

The north, east, and south walls of Room 44(1) each have a single original sector. In the case of the northern wall, any stabilization work done by Fewkes has been supplanted by work done by Crawford in 1984, forming Sector 2. The west wall was originally built in two stages. The lower portion of the wall (Sector 1) was built wider than the sector above it. The upper portion of the wall (Sector 2), above this offset, is also original. Fewkes repaired a section of the lower sector that is large enough to warrant its own sector designation (Wall Sector 3).

Each of the four walls is wet-laid, single stone construction. Each was covered with a complete coat of monochrome plaster that became heavily sooted. A plaster floor band (dado) is not sooted, but added additional embellishment. The hearth that produced the sooting was evidently in the southwest corner, where there is an oxidation plume. Smoke evidently went out through a smoke hole above that hearth. It is possible but unlikely that the hearth dates to the modern era.

Floor

The floor of Room 44(1) was covered with cardboard while we were working in it in order to protect it from plastic deformation associated with the moisture in the room. Although the floor is definitely of puddled adobe and probably original, there are no sub-features except for the hearth.

Condition

The north wall of Room 44(1) has continued to be impacted from moisture coming into the room. We attempted to intercept and drain much of this moisture with a sluicing system consisting of corrugated sheet metal supported on a loose lumber frame. Nevertheless, when the system froze during the heart of winter, it was necessary to enter the rooms, chip off the ice, and carry it out in buckets.

Most of the impact to this room is to the plaster and mortar on the north wall, an area of about 3.25 m^2. Stones have fallen from the wall as the mortar failed, even though the stones themselves remain in good condition. Remaining walls are all in good condition, with the possible exception of a damp portion along the northern end of the east wall. Dampness below Wall Entry 20 was mostly from using a bucket to remove water and ice during the winter of 1995-1996. The dampness has now stopped, although the more severe impacts remain.

Room 44(1) Architectural Context: History of Construction and Use

Room 44(1) was formerly part of an open area that included Room 43, and perhaps Room 46. If Room 46 were part of this open area, then there would have been access to the extreme rear portion of the alcove. This area now has very low headroom, and would have been quite dark. The construction of the wall between Rooms 43 and 44(1) has been discussed. Until that wall was completed, it would not have been feasible to build the second story room above Room 44(1) because the south wall supported the only primary beam, which in turn supported the roof and floor of Room 101(2). This may have taken place as early as A.D. 1206, or as late as A.D. 1268. Dates from adjacent units support the latter.

Based on the presence of a hearth, the plaster, and the addition of a dado, it seems likely that Room 44(1) was a living room. This seems further demonstrated by the connection of this room to Room 43 and to an open area by a T-shaped doorway. Wall pegs on the interior of Wall Entry 20 even suggest that the doorway could have been sealed on the interior by suspending a mat or skin, a rare feature in Cliff Palace. Other sub-features within Room 44(1) include additional wall pegs, a niche, twin ventilation ports, and several shelves that would have served for storing slender, elongate items. There is also a single diagonal loop in the north wall.

Room 101(2)

Excavation and Preservation History

Room 101(2) (Figure 5.8) is a second story attic-like room atop Room 44(1). Fewkes did not excavate nor did he notice the row of secondary roof supports in the east and west walls of Room 101(2). There is no record of preservation work in this room other than what might have been done along with the north wall repairs, when Fewkes may have repaired the primary socket in the north wall of Room 44(1).

Room 101(2) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 101(2) was constructed above Room 44(1) at some time following the construction of the south wall of Room 44(1). The top of the west wall of Room 101(2)

touches the alcove ceiling, as does the east wall, made from thick upright stone slabs. The north wall has deteriorated because of moisture seepage, and the south wall is represented only by a single column of masonry that also extends to the alcove ceiling. Probably the southwest corner was left open above the hearth in Room 44(1).

With the exception of the low headroom, the dimensions of this room are about the same as for its underlying Room 44(1):

Length and axis: 2.48 m N-S

Width and axis: 1.74 m E-W

Roofed floor area: 4.17 m^2

Maximum Headroom: 1.23 m

Minimum Headroom: 0.95 m

Walls

With the exception of the east wall, each wall segment in Room 101(2) consists of a single wall sector that was of single-stone wet-laid masonry construction. What remains intact in these segments suggests semi-coursed construction in all three walls. The east wall is built of two large upright slabs set atop the lower wall, leaned against the alcove ceiling, and mortared into place using scrap stone. Secondary socket (Sk2s) runs all the way through the wall beneath one of these large slabs, suggesting that the roof to Room 44(1) was built prior to installing the slabs. Somewhat surprisingly, a monochromatic plaster was applied to the north and east walls of this low space.

Floor

A single section of floor still adheres to the basal area of one of the slabs. This flooring is made of fine-grained mud, and was originally at least 12 cm thick. The second story wall plaster was added after this floor was installed.

Condition

Room 101(2) is in good condition with the exception of dampness along the upper north and west walls. This dampness was noted first during the winter of 1995 and 1996, and resulted in some discoloration and failure of the wall mortar and stones. There was also severe exfoliation of the plaster on the exterior of the west wall from freeze-thaw cycles (see Open Area 5, eastern facade).

Room 101(2) Architectural Context: History of Construction and Use

It seems likely that Room 101(2) was added after A.D. 1272 along with four other attic-like rooms atop first story units. These also include:

Room 102(2), atop Room 45(1)

Room 103(2), atop Room 49(1)

Room 131(2), atop Room 50(1)

Room 132(2), atop Room 51(1).

Since these units belong to several courtyard complexes, it is at least possible that the residents or users of those rooms collaborated to produce these “attics” as opposed to each family building its own.

Room 101(2) has a single wall peg in the south wall, but it is rather low on the wall and it is difficult to see how it could have served a suspension purpose. The west wall has a shelf on top, which may have served as a storage place for items that were elongate, slender, or not very tall. Other sub-features must have included some type of access point, either laterally or via roof hatchway from below. Alternatively, Room 101(2) may have been entered from the south wall (above Wall Entry 20), from the east, an even lower ceiling, or perhaps from the north, where the wall is now missing because of moisture damage.

What was the function of these “attic” spaces? At first glance, the low ceiling suggests they were used as storage rooms, perhaps of food that would be consumed soon. The location would be less likely to attract rodents or other pests and the plaster might have helped to seal them out. The plaster was applied only to the middle of the large slabs of the east wall and was not retained along the margins. These attic-like spaces could also have served as storage rooms of personal goods besides food . It seems unlikely that they were used as living

rooms. There is no sooting on the interior of Room 101(2), and no hearth. The alcove roof is sooted and soot runs under the walls that remain. Apparently, the heating or cooking that produced the soot took place before the rooms were built.

Room 45(1)

Excavation and Preservation History

Room 45(1) (Figure 5.9) was also excavated by Fewkes, who merely commented that the walls were well constructed, if somewhat mutilated (Fewkes 1911:46). Since the walls appear to be intact, it is likely that he was simply lumping the condition of this unit in with Room 43. Room 45(1) does contain wall pegs and the remnants of plaster, as he indicates. Earlier, Nordenskiold (1893: facing page 60) numbered it as Room 34.

Chandler (1989:47) noted that there is no record of stabilization in this room. However, the room was identified as one that was impacted by water seepage between 1980 and 1983 in Jack Smith's field notebooks. Preservation work like that done by Crawford in Room 44(1) was never completed, however, based on our observations.

Room 45(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 45(1) is located in the middle of Cliff Palace and toward the rear of the alcove. As in Nordenskiold's day, the walls still extend to the alcove ceiling over most of the room. The room has a rooftop "attic" (Room 102(2)), and has three niches, and up to eight wall pegs/peg holes, and three shelves. Two of the shelves are suitable only for narrow objects, but the third is well developed and could have been used for larger objects. Only two of the walls were plastered.

Length and axis: 2.39 m E-W

Width and axis: 2.30 m N-S

Roofed floor area: 5.50 m^2

Headroom: 1.90 m

Walls

Since no stabilization has been done in Room 45(1), each wall consists of a single sector of original masonry. All are of single-stone masonry, although in some cases, thick blocks were placed on edge. The north and east

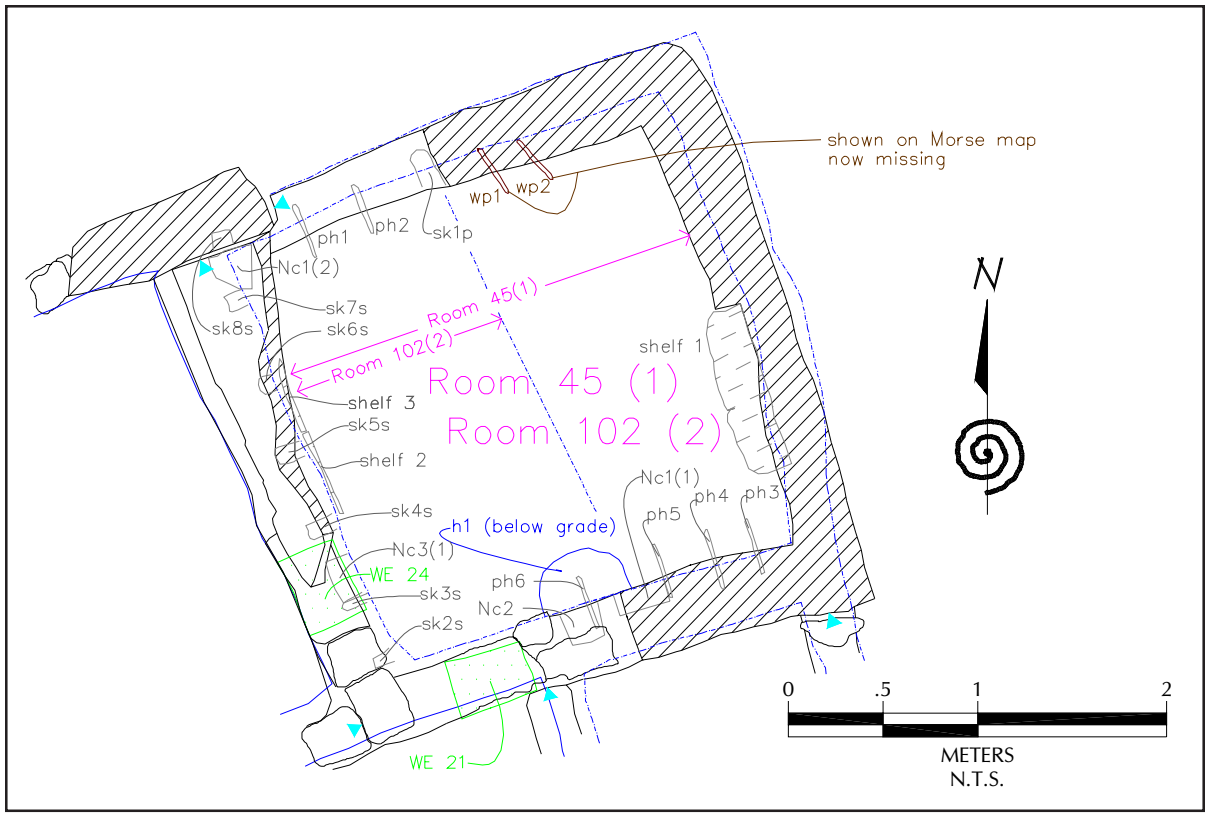

Figure 5.9. Plan View of Rooms 45(1) and 102(2).

walls retain small areas of plaster in locations that indicate a monochrome was once applied. Numerous sub-features are present.

Floor

The floor of Room 45(1) was too damp for us to clean it adequately, but it seems to have been composed of puddled adobe. There is now a skiff of soil over it, which protected it somewhat when water disposal was being carried out during the winter of 1995-1996. The floor was still probably deformed by modern feet at that time, even though cardboard was used to cover it. No floor sub-features are known, although there are several intense oxidation plumes against the middle of the south wall. It is possible that these are from prehistoric fires, but the midwall location below two niches suggests a modern origin, or that room function may have changed.

Condition

Room 45(1) was damaged by water during the winter of 1995-1996, a deterioration process that has continued since 1980, based on Jack Smith's notebooks. Almost all of the damage has occurred on the north wall, although a spot of dampness toward the north end of the east wall resulted in masonry collapse in a small area. Regarding the north wall, dampness has resulted in some plaster exfoliation, mortar friability, and some efflorescence of carbonates to the stones and mortar. Masonry character is still distinctive, and the wall is stable. The map drawn by Stanley Morse in the 1930s shows two wall pegs in the north wall. These are no longer present, and it seems likely that as the mortar eroded, they fell out.

Room 45(1) Architectural Context: History of Construction and Use

Room 45(1) was attached against the exterior southeast corner of Room 49(1) before A.D. 1268. All other remaining corners are bonded. Room 46 was appended to the southern exterior of Room 45(1), but the placement of the doorway in the southern wall indicates that the construction of Room 46 was intended to follow very soon and this planned addition was a factor in the placement of the doorway. Before subdivision into two units, Room 44(1) and Room 43 formed a single large open area along the western exterior of Room 45(1). Room 45(1) was linked to this open space by a T-shaped doorway.

The foregoing scenario implies that Room 45(1) was built as a living room, but that it was transformed into a storage unit. The hearth along the south wall would have been installed and used for the living room but was not used when the room function changed. This interpretation would account for remodeling of the western T-shaped doorway into a rectangular one, installation of the niche below it, and possibly the absence of plaster treatment on two of the walls.

Room 102(2)

Excavation and Preservation History

Room 102(2) (Figure 5.9) is the second story room above Room 45(1). It was not excavated. Generally, neither Fewkes nor Nordenskiold numbered second story units separately, even if they had recognized that Room 45(1) did have a second story. There is no record of any preservation treatment in Room 102(2), even though Jack Smith's notes of the early 1980s outlined areas damaged by seepage from the alcove. The moisture damage to the north wall that he chronicles never was repaired.

Room 102(2) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 102(2) is one of the low, attic-like rooms above ground floor units. It was built above Room 45(1), near the rear of the alcove. The sloping alcove wall forms both eastern wall and ceiling of the unit such that this second story room has about half the floor area of the room below it. Dimensions are as follows:

Length and axis: 2.33 m N-S

Width and axis: 1.33 m E-W

Roofed floor area: 3.10m^2

Maximum headroom: .79 m

Minimum headroom: .00 m

Average headroom is about 60 cm.

Walls

Very little remains of the walls of Room 102(2). A pair of upright slabs is all that is left of the north wall. The southern wall has fallen, although the finished end of the abutting wall of Room 46 shows that it extended to the alcove wall. The west wall consists of two large upright slabs, with Room 101(2) on the other side of the slabs. It is likely that the southern part of the west wall would have been left open, as well as the portion of the wall above Wall Entry 21, because it would have supplied an access point and allowed smoke from the hearth in Room 45(1) to escape.

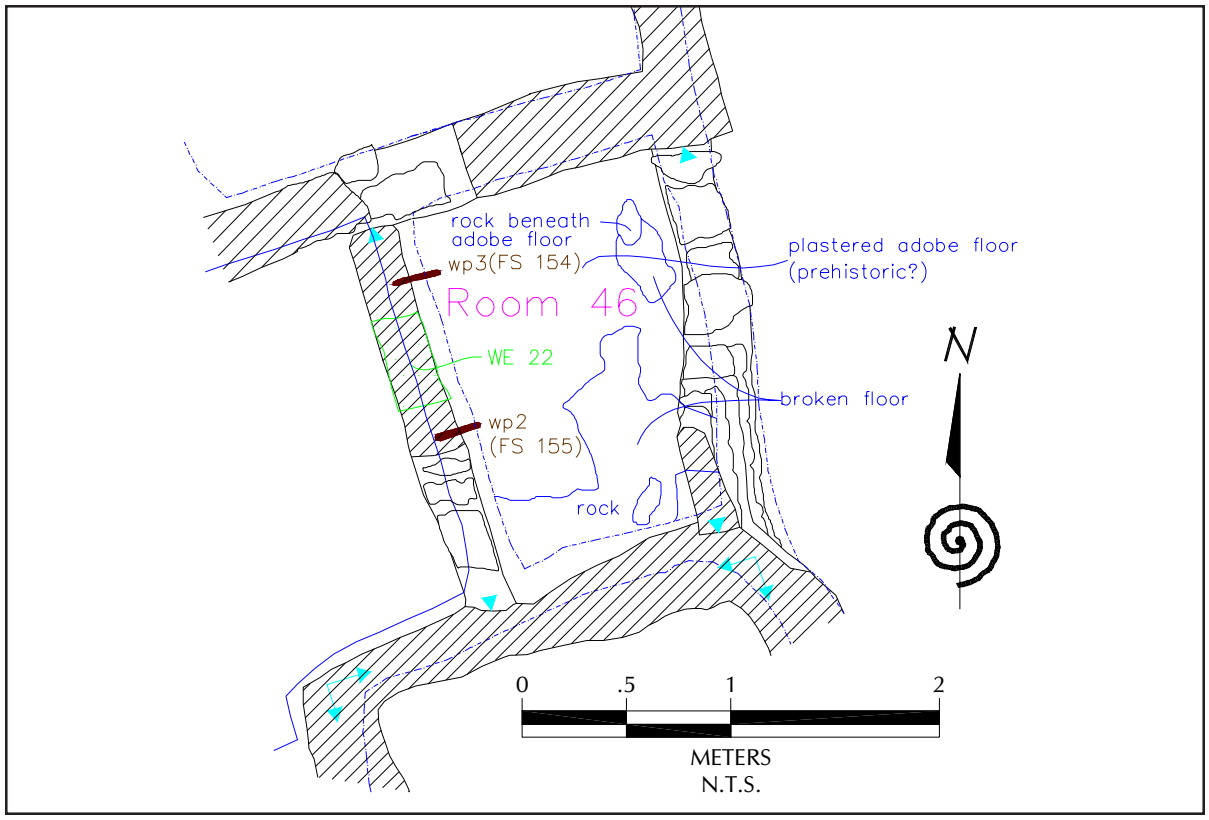

Figure 5.10. Plan View of Room 46.

Floor

The floor of Room 102(2) was probably of adobe atop the primary and secondary poles of the lower room roof. There is a primary socket in the north wall along the alcove face, and the Morse map marks the location of its opposing socket, in the south wall, even though that sub-feature is no longer identifiable. Seven secondary poles or latillas were socketed in the west wall at a level above the primary socket.

Condition

The north wall of Room 102(2) suffers from the same dampness as the unit below it, but most of the wall had already fallen by the time that the room was documented, so the problem is now minor.

Room 102(2) Architectural Context: History of Construction and Use

Room 102(2) was built after A.D.1272. It is difficult to see how a room with such low headroom could have been used for any purpose besides storage. Room 102(2) has almost no overhead. No wall features have been found. The likelihood that the southwestern corner was not fully enclosed suggests that this space was not a granary that was designed to be vermin resistant, unless sealed containers were used. Some kind of non-food storage seems more likely to have been the function and use, even though the room has no sub-features related to storage.

Room 46

Excavation and Preservation History

Room 46 (Figure 5.10) was numbered by Nordenskiold (1893: facing page 60) as Room 38. This unit was excavated by Fewkes (1911). Apparently, it was too mundane to provoke any interest, failing to elicit even a single line of verbiage. Chandler (1989: 48) attributes some preservation activity at the south end of the east wall to Fewkes, based upon her interpretation of the Morse map. From our field inspection, it does not appear that Fewkes did any stabilization work on Room 46.

Room 46 Summary of Architecture and

Condition in 1995

General Description and Major Dimensions

Room 46 is a small room positioned in the rear of the alcove. All four walls are of single-stone, rough masonry. There is a rectangular-shaped doorway (Wall Entry 22) in the west wall. Dimensions are as follows:

Length and axis: 1.74 m N-S

Width and axis: 1.22 m E-W

Roofed floor area: 2.12 m^2

Maximum headroom: 1.99 m

Minimum headroom: 1.07 m

Walls

The walls of Room 46 are composed of single-stone, wet-laid masonry. Mortar is relatively abundant, and the lower portion of the east, west, and south walls have been plastered with a dado 32 cm in maximum height. The north wall is entirely plastered with a single slightly different color. This is probably because it was exposed as the exterior of Room 45(1) before the area of Room 46 was enclosed. The lower part of the east, west, and south walls were plastered after Room 46 was erected.

Floor

Room 46 has a plastered adobe floor that is probably prehistoric. No floor sub-features were encountered. Stones visible through breaks in this floor indicate that occasionally rock was used as a sub-base.

Condition

All walls of Room 46 are in excellent condition, with no active deterioration. Even the plaster seems immune to exfoliation. Areas of floor breakdown probably are related to the time when the site was visited by the public without a National Park Service presence.

Room 46 Architectural Context: History of Construction and Use

Room 46 was added to the southern exterior of Room 45(1), which has plaster on the south facade. The construction of Room 46, probably about A.D. 1268, also served to enclose the space along the northern side of Room 42. The east and west walls abut at each end. Within the large block of rooms that extend southward from Rooms 60 and 148, this room is among the last constructed. Until Room 46 was built, it would have been possible to enter Open Area 15 through a gap between Rooms 45(1) and 42.

The small size of Room 46, the doorway that seals from the exterior and the location in the rear of the alcove all suggest that this is a food storage room. It also has a dado/floor band, and a pair of wall pegs that flank the doorway.

Room 47(1)

Excavation and Preservation History

Room 47(1) (Figure 5.11) was excavated by Fewkes. He observed that the roofing sockets above it demonstrated that it was a two-story unit, along with its neighbor, Room 48(1) (Fewkes 1911:45). Nordenskiold (1893: facing page 60) depicts a doorway in the north wall, although there is no indication in which story the doorway was present. He numbered the room 36.

Chandler's (1989:49) summary indicates that the south wall of the room was stabilized by Fewkes, who also capped it. She further notes that Al Lancaster's field notebooks indicate that in August of 1943 he installed a beam and made associated masonry repairs. A similar repair is described for Room 48(1), with fresh rock and beams cut in each instance.

I think that there is an error in Lancaster's description of work done on August 23, 1934. There are no fresh beams in either Room 47(1) or 48(1), and in fact, Room 47(1) has none. The beam in Room 48(1) is stone axe cut, and is shown in early photographs. Lancaster's field notes probably refer to a repair in Rooms 39(1) and 40(1) where new beams were installed. These rooms are nearby but across Open Area M. Lancaster's log of 1934-1935, explains other kinds of repairs to Rooms 39(1) and 40(1) made on June 22, but nothing about installing the beams, probably because he had not yet done the work. The wall tie to which he refers in his entry of June 25 was associated with the partition wall between Rooms 39(1) and 40(1), not to installation of the beams in those rooms.

The south wall in Room 47(1) has been stabilized, probably by Fewkes, but the quality of the work is such that without better documentation, it is not possible to

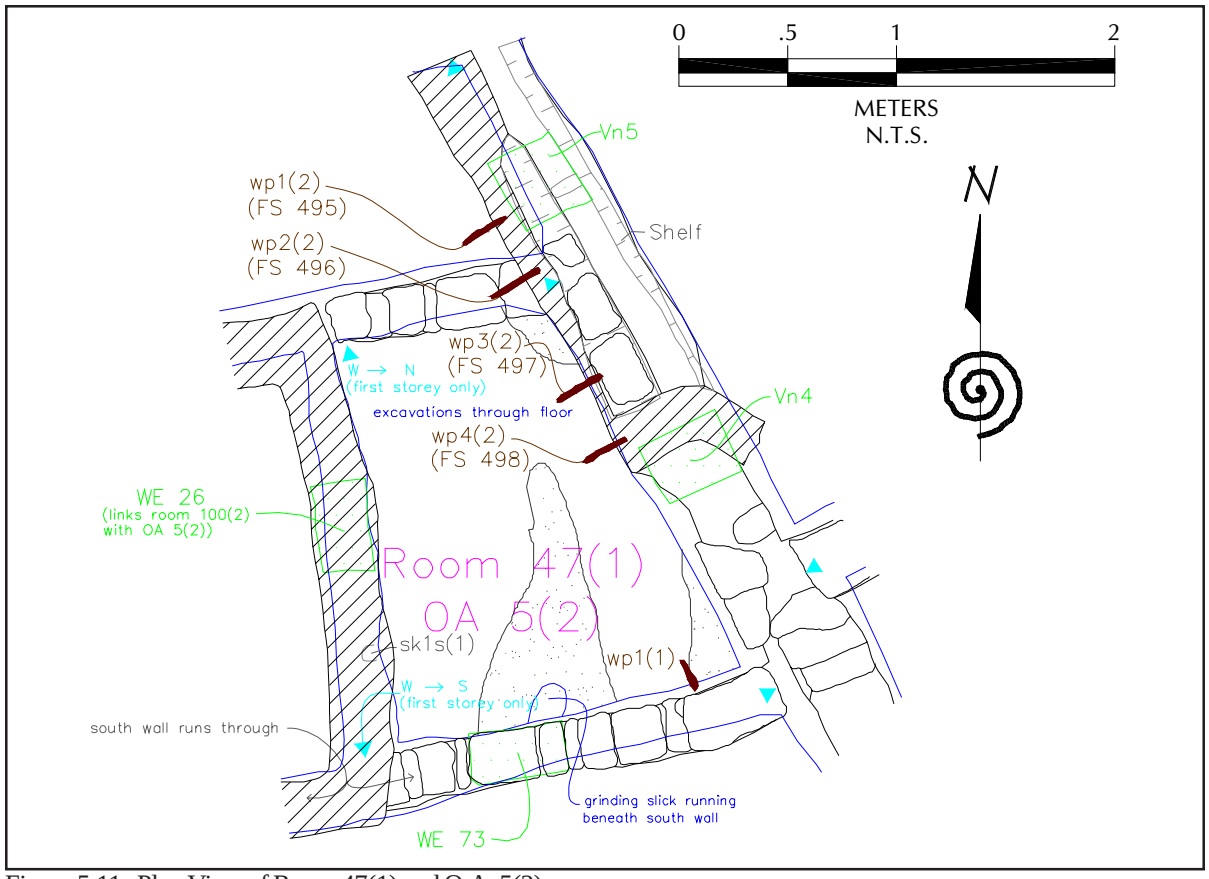

Figure 5.11. Plan View of Room 47(1) and O.A. 5(2).

be certain. There is no evidence that any work was done on the east wall of the room, which retains the original plaster. The upper portion of the north wall was repointed during the modern era, probably by Fewkes. In addition, a stack of stonework added to the exterior of Room 100(2) was probably added by Fewkes. This modern addition runs contrary to the interpretation of the second story space made in this report. The basal portion of the west wall has been repointed, resulting in a plaster that simply derives from mortar joint extrusions.

Room 47(1) Summary of Architecture and Condition in 1995

General Description and Major Dimensions

Room 47(1) is a single-story unit with an open area atop it. A small quadrilateral, it was constructed below a bedrock ledge or boulder, with a portion of the boulder face comprising part of the east wall and floor. The doorway faces toward Open Area M, and the room is thought to be associated with Kiva M or Kiva L. Room 47(1), along with Room 48(1), forms the northern wing that defines Open Area M. The floor level of Room 47(1) is well below the level of Open Area M and of Room 44(1), its neighbor. Dimensions are:

Length and axis: 1.86 m N-S

Width and axis: 1.41 m E-W

Roofed floor area: 2.62 m^2

Headroom: 1.68 m

Walls

All walls in Room 47(1) are single-stone, wet-laid masonry. The south wall consists of a single sector, which is original. The north and west walls each consist of two sectors, original construction and stabilization work. The east wall contains an offset. The surface above that offset is a second wall sector in the east wall of Room 47(1). The east wall is heavily plastered with a single color, unlike the others in this room.

Floor

The floor of Room 47(1) was not preserved during excavations or was broken up because of visitor entry. Bedrock and cultural fill soil are exposed on the surface.

Condition

Room 47(1) received some seepage from the alcove ceiling during the winter of 1995 and 1996. Most of the damage occurred to the face of the east wall, but at the second story level, in Open Area 5. Probably some moisture entering the floor of Room 44(1) has moved laterally, and has impacted the plaster on the lower east wall, but this has not occurred in sufficient amounts to lead to plaster damage.

The moisture on the basal part of the west wall probably results from moisture wicking northward from Open Area M. This capillarity is too mild to show on the south wall, which has no plaster/joint extrusion. This suggests that there is only enough moisture to dampen the porous materials, not the building stones.

The floor is missing, and subflooring is exposed. The primary sub-feature from this area is a grinding slick that actually runs beneath the south wall of Room 47(1) and probably antedates room construction.

Room 47(1) Architectural Context: History of Construction and Use

Room 47(1) was built as part of a two-room unit with Room 48(1). These two rooms formed a wing that helps to define Open Area M. The west wall of Room 47(1) subdivided the larger quadrilateral that was laid out when the wing was planned. Although no wood was found in Room 47(1), the construction event for the first story can be placed with confidence about A.D. 1272, based on a nearby construction timber. The timber that was dated is one of the few pinyon logs at Cliff Palace, cut at an age of 61 years (FS 157/GP-6956/MV-510).

Architecturally, Room 47(1) was added very late among those units found in the central part of Cliff Palace. It was placed against the west facade of Room 44(1), and the placement was at an angle to avoid placing too much weight atop the roof of Kiva M. One aspect of the location of Room 47(1) and 48(1) that is yet to be satisfactorily explained is its semi-subterranean setting. In spite of the late construction date, the base of each wall is well below the currently projected level of Open Area M. Unless there was a later floor that was removed by the excavators, placement of a later unit would have required some aboriginal soil removal in order to create a lower floor level than what is currently visible. One possibility is that all the masonry work at the base of the walls is modern in origin rather than prehistoric. This situation seems unlikely given the elevation and nature of Room 48(1) and the downward extension of east wall plaster in Room 47(1). Rooms associated with Courtyard Complex P, located to the northwest of these units, have a similar elevational setting.

Room 47(1) may have been used as a granary based on the characteristics of the small size, doorway that seals from the exterior, and lack of a hearth. The only interior wall feature is a single peg hole in the south wall. Even though the floor has been removed, there is no sign of oxidation on the bedrock subfloor, and the walls are unsooted.

Open Area 5(2)

Excavation and Preservation History

Open Area 5(2) (Figure 5.11) is located above Room 47(1). It was never investigated by anyone previously. Although it can easily be misconstrued as an enclosed space, it probably never was enclosed and the stack of masonry on the north wall is actually a modern addition done by Fewkes' crews.

Open Area 5(2) Summary of Architecture and Condition in 1995

Open Area 5(2) is located between Open Area M and Open Area 16, and immediately west of Room 101(2). The eastern wall is the same as the exterior facade of Room 101(2), and the western facade is synonymous with the exterior east facade of Room 100(2). Open Area 5(2) was connected to Room 100(2) through Wall Entry 26. There were no north or south walls on this second story level. On those sides, Open Area 5(2) is bounded by what would have been the edge of the roof. Dimensions are:

Length and axis: 1.86 m N-S

Width and axis: 1.41 m E-W

Roofed floor area: 2.62 m^2

Headroom: 1.80 m

Walls

The two walls that remain around Open Area 5(2) are parts of surrounding units. Each is a single stone thick, and each was wet-laid. The exterior western facade of Room 101(2), synonymous with the eastern facade of Open Area 5(2), was completely plastered, and one of the twin ventilation ports to Room 44(1) opened directly above the floor of Open Area 5(2). There are four wall pegs in the eastern facade, near the alcove ceiling, and the eastern facade of Open Area 5 has multiple layers of plaster covering the entire wall. Any masonry that remains exposed or discernible beneath the layers of

plaster consists of shaped blocks, many of which are pecked.

Floor

Open Area 5(2) has no intact floor, but the edge of the floor is clearly visible along the western walls, where the wall plaster ends. The floor of Open Area 5(2) would have been set atop a primary beam socketed in the north and south walls of Room 47(1), probably near the face of the east wall. There is a retrofit socket in the west wall (Sk1s), but any others have been filled by stabilizers.

The oxidation plume on the eastern facade shows clearly the location of a hearth in Open Area 5(2). This plume is intensive and the plaster may be thick enough to produce a viable archeomagnetic-dating sample.

Condition

The two remaining walls of Open Area 5(2) each have at least one problem. The eastern wall received large amounts of moisture during the winter of 1995 and 1996. This moisture percolated from the alcove into the wall top, and generated dampness down to approximately the floor level of Open Area 5(2). As this moisture froze and thawed repeatedly, plaster exfoliated. The upper portion of the east wall remains stable although the aesthetics are compromised.

In the west wall, the lintel stone above Wall Entry 26 has cracked. Otherwise, the west wall is in good condition. A crack monitor could be installed at this location in order to determine whether the movement is continuing, although there appears to be little cumulative change in the wall or the lintel stone.

Open Area 5(2) Architectural Context: History of Construction and Use

Open Area 5(2) was built simultaneously or soon after the two ground floor units, Rooms 47(1) and 48(1), which were added some time between A.D. 1272 and 1280.

The architectural context of Open Area 5(2) is quite unusual for an Ancestral Puebloan site with a two story unit in front of a one story unit (Room 44(1)). Open Area 5(2) may have been left as an open space to allow light and air into Room 44(1). Room 100(2) was a freestanding two-story unit closer to the front of the alcove, with one story Room 44(1) behind it. If Open Area 5(2) had been enclosed, no light would have entered Room 44(1) through Ventilator 1 and southwestern light to Ventilator 2 would have been partially blocked.

The wall pegs in the eastern facade of Open Area 5(2), located up near the top of the alcove, could not have been reached without a ladder, unless Room 47(1) had already been built when they were installed. This is a key factor in the architectural development in Courtyard Complexes M and N, and perhaps Courtyard Complex L. Several rooms have "attic-like" rooms above them in this area. The wall pegs under discussion are in the exterior wall of one of these attics. The attics seem to have been built as part of a single construction episode, perhaps reflecting cooperation by several households. If the previous interpretation is correct, it follows that Rooms 47(1) and 48(1), along with the second story units, were added before the attic-like rooms. Thus, at least some time elapsed before the construction of Room 101(2), Room 102(2), and similar units. Consequently, the attics were built sometime after A.D. 1273. This perspective conforms to what is known about the construction history of Cliff Palace.

Open Area 5(2) was a rooftop work area where cooking could be done. It was also an area from which to retrieve whatever was hung on Wall Pegs 1-4. Open Area 5(2) is connected to two other kiva rooftop open areas, as well as Room 100(2), such that access was quite flexible.

Kiva M

Excavation and Preservation History

The first record of Kiva M (Figures 5.12 and 5.13) was made by Nordenskiold, who termed it Room 55, one of a group of three *estufas* (Nordenskiold 1893:60-61). Fewkes (1911:23) depicts Kiva M as one of seven kivas in the Plaza Quarter. He notes that Rooms 41 and 42 were entered from the rooftop plaza above Kiva M (Fewkes 1911:45), an area that coincides with Open Area M in this report. Whereas he usually provides some dimensions for most other kivas in Cliff Palace, regarding comparable data for Kiva M he remains mute, except with respect to his stabilization interventions:

> The northern wall of room 39 was wholly undermined and tottering when the work of repair was commenced, so that its foundations had to be built up from the floor of kiva M. To make this difficult repair work effective it was necessary to enlarge the base of the wall, making the side of kiva M curve slightly inward and thereby insuring a good foundation [Fewkes 1911:44-45].

Further, he offers:

> Perhaps of all the ceremonial rooms repaired the

> walls of kiva M were in the most dangerous condition. The front of the northern wall of room 39 had been undermined and was without foundation, hanging without basal support except at the ends. A support was constructed under this hanging wall, and to give additional strength the foundations were rebuilt a little broader at the base than formerly, causing the wall to bulge almost imperceptibly into the kiva [Fewkes 1911:62].

Among all kivas at Cliff Palace, Kiva M is architecturally unique because of the roof construction and shape. Fewkes delves into the question of kivas without pilasters and the mode of roofing such structures, offering Kiva M as a "subtype" of the type "kivas with pilasters and a recess" (Fewkes 1911:49, 61-62). Kiva M, although lacking true pilasters, seems to have a rudimentary partial banquette/intercolumnar space, and a recess, which extends toward the north. The roofing is similar to the kiva at Scaffold House at Navajo National Monument that Fewkes describes:

> The rafters here are parallel, and extend across the top of the kiva, their ends resting on the woll (sic) The middle beam, which is the largest, is flanked on each side by another. Upon these supporting beams are laid others at right angles, and on these were placed the brush, bark, and clay that covered the roof. Entrance was gained by means of a hatchway on one side of the roof near the large banquette, which occupies a position, as respects the entrance and the place supposedly occupied by the ladder and the fire-pit, similar to the spectator's platform of a modern rectangular Hopi kiva [Fewkes 1911:61-62].

To supply some context for Fewkes' kiva typology, the second type of kiva that Fewkes defines is oval in ground plan, surrounded by quadrilateral walls, exemplified by Kivas O, R, and W at Cliff Palace (Fewkes 1911:62-64). He alleges that this kiva type probably had a flat roof instead of a cribbed one since pilasters are lacking. We are unsure that Kivas O and R ever had any kind of roof, however.

Along with the remaining portions of the site, Kiva M was mapped by Morse in 1934. Since the map shows capstones in place as a lining around the ventilator shaft, it is assumed by Horn (1989:130) that Fewkes did the

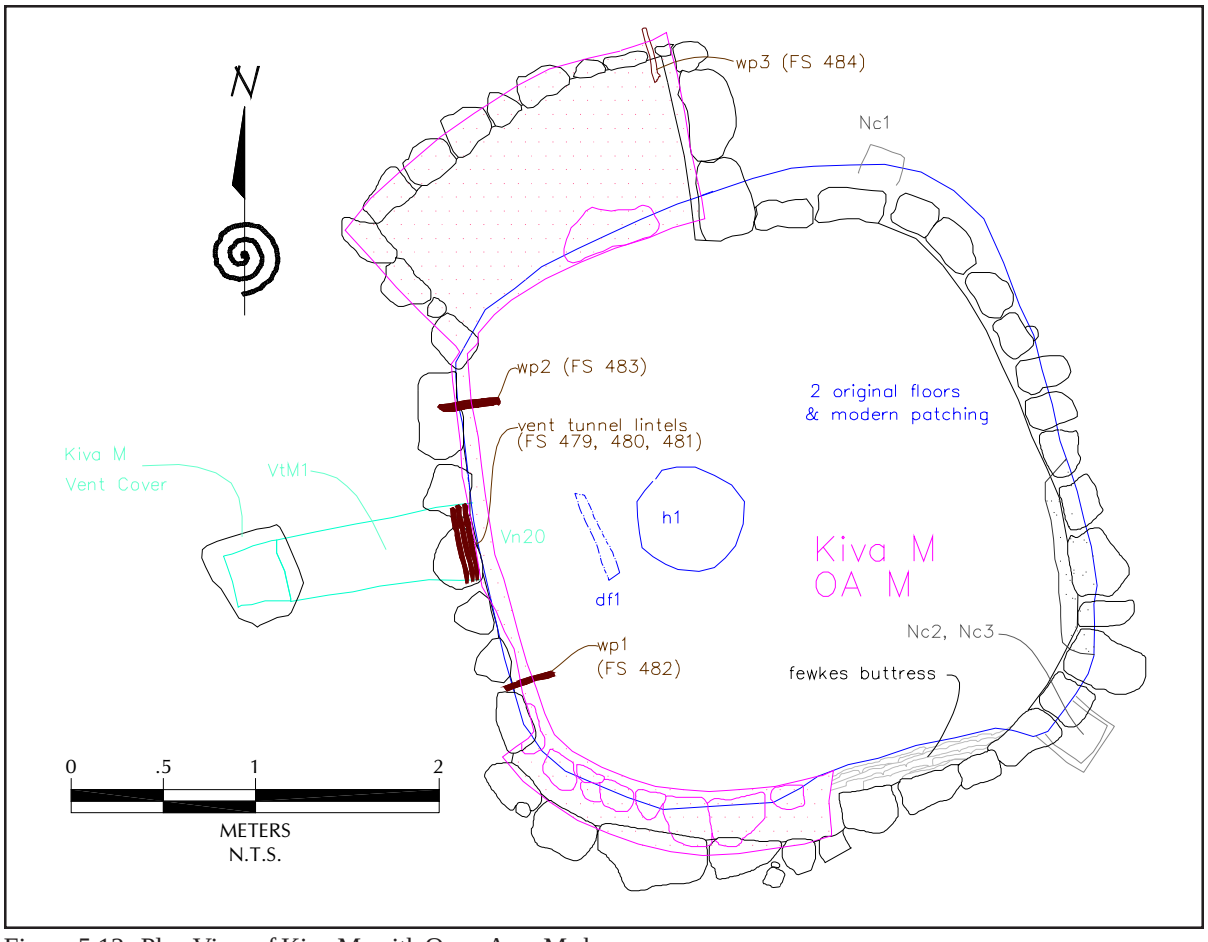

Figure 5.12. Plan View of Kiva M, with Open Area M above.

work. No other stabilization work is documented, although patches of stabilization work done in portland cement are now present. No documentation on when these were added or who did the work has yet come to light.

Jim Copeland and Gay Ives (1973) recorded information on painting/decoration within the structure:

> Evidence of red paint on the walls. Indications of triangles. The red plaster on the walls is heavily sooted. There are what appear to be hand prints above the vent shaft but we have doubts about these. They may be from stabilization crews [Copeland and Ives 1973]

The triangles were apparently painted, rather than incised.

In 1985, Constance Silver surveyed the plaster at Cliff Palace, and recorded what was then present in Kiva M. While noting the extensive masonry repairs to the walls, her findings can be summarized as (Silver 1986):

1. originally plastered in a monochrome pinkish gray;

2. areas above banquette level are totally sooted;

3. painted plaster over sooting below banquette level (traces of red paint and a white-painted handprint);

4. at least three layers of plaster, one of which is sooted;

5. plaster colors: light reddish brown (5YR 6/4); yellowish red (5YR 4/6), pinkish white (5YR 8/2);

6. 120 ft^2 remaining, of which 20% is in fair condition and 80% of which is in poor condition; all surfaces are eroded and powdery.

7. Conservation Priority: highest.

There are no published tree-ring dates from the original construction of Kiva M, and most of our assertions about construction dating in or about A.D. 1268 come from the details of associated Courtyard Complex M unit, and architectural context from other parts of the site. A ventilator tunnel lintel collected during our wood inventory did produce a date of A.D. 1278+L, but this probably represents a repair.

Kiva M Summary of Architecture and Condition in 1995

Moisture percolating into the rear of Cliff Palace enters Open Area M and Kiva M. This condition seems to have persisted for quite some time. We noticed an area below a large crack above rooms to the east covered with mossy vegetation that probably took several years to develop. The moisture and the dampness on the eastern wall and floor of the kiva prompted the documentation work.

All walls were photographed and wall elevation field sketches drawn (Figure 5.13). The photography was mated to the elevations and detailed hand-drawings made. Specialized dimensions and annotations were added to the drawings, which included condition information, feature and wall sector designations, and the locations of wood specimens for creating and inventory and generating tree-ring dates.

General Description and Major Dimensions

Kiva M is circular, with a well-developed recess extending to the north and a small portion of banquette extending to the southwest. The ventilator tunnel extends to the west from the wall facade between these two features, which are linked by a slight horizontal offset. The remaining facade, comprising the eastern wall, has no similar offset at the "banquette" level. Instead, bedrock boulders were incorporated into the wall and were visible while the kiva was being used, since they share the sooting that the plaster exhibits. The upper portion of the wall was rebuilt by Fewkes in 1909, and is clearly visible, since it has no sooting. Repointing of original wall stones in place demarcates the transition immediately below the modern era's reconstructive work. The three coats of plaster are in various states of preservation, with heavy sooting, especially on the upper portions of original wall surface.

There is a small amount of loose sediment on portions of the floor; it was not removed, partly because the floor was damp. The Morse ground plan shows a hearth and sipapu in the floor, and an upright slab deflector remains in the same place as is shown on his ground plan.

Dimensions are:

Overall north-south diameter: 3.13 m

Overall east-west diameter: 2.95 m

Floor area below offset/banquette: 8.00 m^2

Banquette/recess height above floor: 1.14-1.21 m

Average banquette depth: 32 cm

Walls

Four wall sectors were defined during the study of Kiva M. At least one represents original construction, two

result from modern work, and the last one is probably original, but may represent repairs needed to address the same dampness problem that presently characterizes Cliff Palace.

Wall Sector 1. Wall Sector 1 is of original construction, consisting of large shaped blocks set into a mud mortar. Bedrock boulders were incorporated into the facade, and it was plastered. Occasional stones are now visible where the plaster has eroded away or was applied as little more than a wash. Although there are a few isolated chinking stones, the sector joints are not considered to have been chinked. Wall Sector 1 has a few spot repair patches on its surface, which were probably applied in conjunction with the 1909 repairs comprising Wall Sector 2.

Wall Sector 2. Wall Sector 2 was added in 1909 by Fewkes' crews. For the most part, it is a reconstruction, although a few original stones remaining in place were simply remortared. These can be identified by sooted plaster surfaces. Even though a mud mortar was used, the surface treatment in this sector shows the characteristic trowel marks and slick finish of Fewkes' stabilization techniques. Abundant mortar was smeared across the stone faces, producing an extruded smoothed plaster, which was left unsooted. In the recess and on the wall above the banquette are dribbles or "runs" resulting from this preservation work. These stain or mar the original sooted surface of Wall Sector 1.

Wall Sector 3. Wall Sector 3 is probably original. It consists of small stones placed along the lower portion of the eastern facade extending between the eastern wall of the recess to Niches 3 and 4. These stones are heavily coated with carbonates from moisture transmission, and are damp or very soft. In addition, a number of them have been oxidized/burned, suggesting that they were salvaged from another location, since the adjacent stones are often unburned. Patches of plaster help to define the margins of Wall Sector 3, but they may actually be repairs to Wall Sector 1. There is no documentation of modern preservation work to Wall Sector 3 so it is likely that the sector represents an original repair.

Wall Sector 4. Wall Sector 4 was produced by Fewkes' crewmen in 1909. He specifically notes it in his report and his notes. Visually, the work shares characteristics with Wall Sector 2.

Miscellaneous Patches/Repairs. In addition to the aforementioned sectors, a number of small patches can be identified based on visual characteristics. These are spot repairs in which small voids or deeply eroded mortar joints were repaired with portland cement or soil cement mortars. Alternatively, soil mortar was added by Fewkes' crewmen who were creating Walls Sectors 2 or 4. Occasionally, loose stones were reset. Approximately 10-15 such areas are present. One highly visible example is in the lower northeast corner of the recess, where raw portland cement was used. The most extensive patched area is above and around the ventilator tunnel, which had weakened and was repaired by Fewkes' crew.

Wall sub-features within this structure include a ventilator, four niches, and an assortment of six wall pegs/peg holes. Other details include remnants of painting and small-scale episodes of apparently accidental fires/burning. The two areas of localized oxidation are found on the masonry adjacent to the floor. These are immediately north of the ventilator tunnel and immediately east of the recess. These indicate fires at those locations, but the structure itself did not burn.

Floors

The floor of Kiva M was damp when we originally documented it. Moisture was moving down into the fill soils behind the kiva, so it was difficult to clear the floor. Kiva M probably had two original floors, which were subsequently patched during the modern era. All work was of puddled adobe. A hearth and an upright slab deflector were the only floor features.

Condition

Kiva M had been receiving moisture from percolation into the rear of the alcove. Groundwater moves below grade and evaporates along the eastern facade. It is likely that this had gone on for some time, but the events of the winter of 1995-1996 indicate that there was more ambient water then. The eastern facade and floor of the structure were damp, and have substantial calcium carbonate deposition; some stones are soft. Mortar joints in Wall Sector 3 are eroded to a depth of 3 to 10 cm. The water percolation affected Niche 2, which has a cracked lintel slab and was surrounded by soft slabs. In summer of 2000, conservators working with the University of Pennsylvania placed a moisture monitor in the bottom of Kiva M.

In 1985, Silver estimated that 120 ft^2 of plaster remained, 24 ft^2 of which was rated in fair condition because there was reasonable adhesion to the wall, and the remainder of which was in poor condition. A comparison of the photos taken by Silver in 1985 with photos taken in 1995 may yet shed some light on deterioration and loss over the last decade.

There is loose fill in Kiva M either from breakdown of the veneer joints and spillage of unconsolidated fill from behind the veneer into the kiva or from windblown sediment. The concentration of this debris at the base of the ventilator tunnel and Niches 3 and 4 suggests that most of it is cultural sediment from behind the veneer,

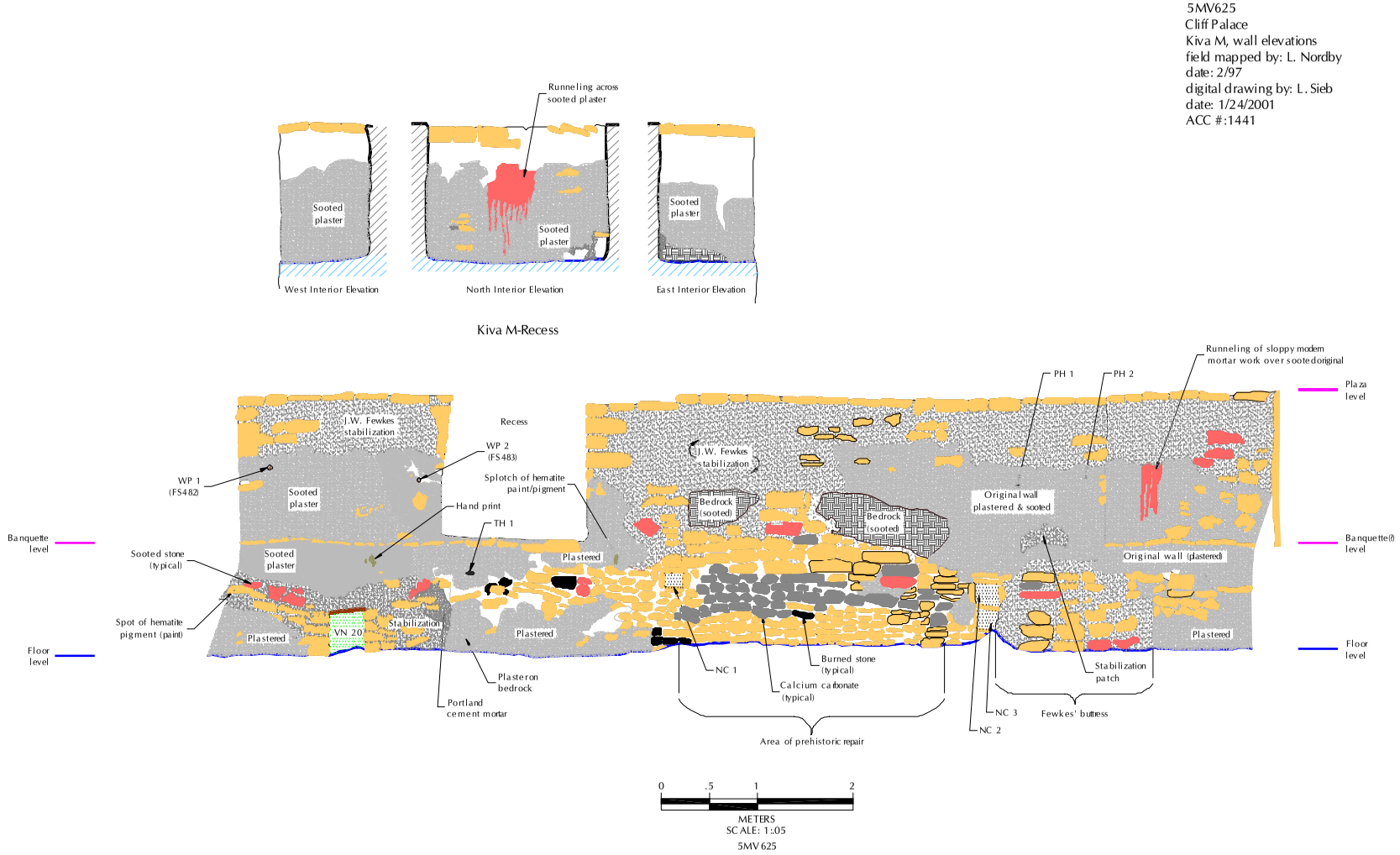

Figure 5.13. Cliff Palace - Kiva M, Interior Elevation.

not aeolian sediment. This may have been accelerated by rodents.

Kiva M Architectural Context: History of Construction and Use

Although tree-ring dates are few, we think that Kiva M was probably built in A.D. 1268 or 1269. This is mostly because of contextual information that supply a smattering of dates in the late 1260s, and the lack of building dates for adjacent units between A.D. 1206 and 1260. Admittedly, this is a somwhat circumstantial argument, but is consistent with the available facts.

Concerning attempts to chronicle the development of kiva architecture, a few archeologists (Lancaster et al. 1954:53-59; Lister 1966; Nordby 1976) have attempted to develop relative chronologies by evaluating kiva architecture and assessing when various features and attributes first appeared at Mesa Verde. These approaches are fraught with some difficulty because there are numerous exceptions to each of these "stage" schemes. In addition, the work generally has centered on open sites rather than cliff dwellings, where structure morphology often reflects adaptations to bedrock exposures or adjacent previously existing buildings. Still, an assessment of these various architectural features generates the following list of attributes present in Kiva M that indicate "earlier" rather than "later" characteristics:

1. upright slab deflector;

2. long ventilator tunnel;

3. absence of six (or in fact any) pilasters, requiring a flat roof;

4. no continuous banquette;

5. unusual position of recess (extending northward rather than to the south or southeast);

6. Niche 1 being somewhat equivocal, absence of four slab-lined niches; and

7. less polished masonry style, including fewer pecked-and-ground blocks.

It is likely that Kiva M was built before the "wings" of the complex (Rooms 47(1) and 48(1) on the north and Rooms 39(1) and 40(1) on the south) were added. Examining the ground plan indicates that these walls are positioned to avoid placing additional dead load to the roof of Kiva M: they flare outward from the alcove rear. A superficial look at other kiva placements at Cliff Palace shows that they normally, although not always, tend to have more surrounding space. The lack of space around Kiva M is what led to Fewkes' stability problems below the north wall of Rooms 39(1) and 40(1). On the other hand, the peculiar placement of the recess may indicate that Rooms 39(1) and 40(1) were already in place before Kiva M was constructed, preventing the construction of a recess that extended toward the south. Rooms 47(1) and 48(1) definitely postdated Kiva M construction.

Open Area 6 and Miscellaneous Structure 3

Excavation and Preservation History

Open Area 6 and Miscellaneous Structure 3 were newly designated as part of our project work. They had not previously been numbered separately from other units at Cliff Palace. They are found immediately west of Fewkes' Rooms 41 and 42.

Open Area 6 Summary of Architecture and Condition in 1995

Open Area 6 is a low platform that was built on at the eastern side of Open Area M by constructing a low retaining wall (Miscellaneous Structure 3). The retaining wall is only about 25-30 cm high, facilitating easy passage from one area to the other. Open Area 6 is situated along the exterior western facade of Rooms 41 and 42 so the area also served as a platform to enter those two units. The exterior south wall of Room 43 and the bedrock boulder upon which it was built define the northern boundary of Open Area 6. The short wall that links Room 41 with Room 40(1) defines the southern side of Open Area 6. Dimensions of Open Area 6 are:

Length and axis: 3.13 m N-S

Width and axis: 1.15 m E-W

Enclosed floor area: 3.60m^2

Headroom: 2.12 m

Walls

Open Area 6 is defined on three sides by enclosing walls, with Miscellaneous Structure 3 forming the fourth side. These wall surfaces are somewhat variable. On the northern side, a masonry wall either fell out or was partially torn out, with a patch created with what appears to be dry-laid masonry. On the interior of Room 43, this

patch has been mudded, probably in two separate episodes, since two mortars are present. This work is not apparent on the side of the wall facing Open Area 6.

The eastern facade of Open Area 6 is almost completely covered with plasters, although in some cases the stonework is visible because the plaster has been partially worn away by modern visitors. A pink (7.5YR 7/4) plaster coat was applied during site occupancy, and a light gray (5YR 8/1) aura was added around Wall Entry 19 to Room 41.

The southern facade of Open Area 6 consists of single-stone, semi-coursed masonry. The exposed stones are large, with extruded mortar jointwork. In the southwest corner is a hearth that produced enough soot to obscure some of the stonework. This wall was not plastered.

Miscellaneous Structure 3 defines most of the western side of Open Area 6, but only because of the drop in floor level. Miscellaneous Structure 3 was built of moderately large stones that were placed in semi-coursed to fully-coursed layers. Unfortunately, most of the mortar has eroded from this wall, since Open Area 6 has long been an area of deterioration and water entry into the site.

Floor

The floor of Open Area 6 probably was originally plastered, but now has seen so much damage from visitor foot traffic and moisture that it has been transformed into damp dust and sediment. Visitor traffic is no longer an impact. The corner hearth is well defined and has a low collar, which is not shown on the Morse map, even though the hearth is depicted. This hearth probably was used during the modern era, but was originally built by the Ancestral Puebloan population.

Condition

Open Area 6 has been receiving moisture for some time, but dampness peaked during the winter of 1995-96. The moisture source is located directly beneath the crack at the back of the ledge, an easy avenue for seepage. A row of four or five buckets was placed below these drips during that winter, but the moss beneath the buckets indicated perpetual dampness. The more highly compacted surface of the open area was punctured by continual dripping, and standing water could be observed beneath it. From its entry into the ground, this moisture would move toward the west, exiting through Miscellaneous Structure 3, removing the mortar in the process, or through the walls defining the northeast corner of Room 40(1). In Room 40(1) plaster exfoliated from the exterior walls.

Dampness also moved downward into the soils behind the eastern wall of Kiva M, and evaporated out along that location. This probably has been a continual problem, since some of the repairs to that location are thought to be aboriginal. Further damage to Room 40(1), Miscellaneous Structure 3, and Open Area 6 has been greatly reduced or eliminated with the addition of waterless sanitation facilities on the mesa top above, although the eastern wall of Kiva M still appears somewhat damp.

Open Area 6 Architectural Context: History of Construction and Use

Open Area 6 would have been built about A.D. 1268 along with Rooms 41 and 42, probably by adding Miscellaneous Structure 3. Miscellaneous Structure 3 was built before Room 40(1) because the masonry of Miscellaneous Structure 3 runs beneath the masonry of Room 40(1). At that point, in the construction sequence, Open Area 6 would not have been defined along the southern side, since Rooms 39(1) and 40(1) would not yet have been built. Open Area 6 would have been an elevated platform that merely supplied access to the other units. From available information, there is no way to know whether access to Room 43 was an important factor in the creation of Open Area 6. If such were the original intent of the builders, it was changed when the south wall of Room 43 was modified. Hearth 1 was not added until after the two rooms (39(1)) and 40(1)) to the southwest of Open Area 6 were built.

Open Area M and Miscellaneous Structure 4

Excavation and Preservation History

The new designations of Open Area M and Miscellaneous Structure 4 result from our project, although it is likely that Fewkes cleared debris from the area in 1909. Fewkes and Lancaster did preservation work in Open Area M, although most was linked with the surrounding rooms. Lancaster's journals of 1934-35 note that one of his workmen, Dobbins, wedged the north wall of Room 40(1). This was done on the exterior of the wall in order to provide friction between two sections separated by cracks. Small fragments of juniper shakes are still in place at that location, and attest to the work. Part of this same era of repair includes the setting of vigas across Rooms 39(1) and 40(1) where the resulting mortar work impacts the southern facade of Open Area M.

Fewkes worked on the northern side of Open Area M,

although his work was quite different in nature. He capped the descending stub end of the south wall of Rooms 48(1) and 100(2), and probably made some alterations around the doorway in the south wall of Room 47(1). Fewkes' map suggests that Rooms 39(1) and 40(1) were two stories in height. Although there was probably a rooftop open area above those two units, there is no evidence to support his claim for rooms, since the alcove ceiling is heavily sooted in this area and there are no ghost lines where walls once stood.

The eastern facade of Open Area M was largely unaltered, with two exceptions to the exterior of the west wall of Room 43. First, an upright stone along the southern jamb of the T-shaped doorway was reset by someone working in colored portland cement. There is no record of this repair, but it probably occurred sometime after 1940. Second, the step stone beneath this same doorway was loose, probably from people entering Room 43. This stone was reset by Kathleen Fiero's crew during the summer of 1997, using a Rhoplex amended mortar.

The only other alteration to Open Area M may have been part of the Park Service efforts to eradicate historic graffiti from Cliff Palace. Abrasion marks and scratching on the plaster of Rooms 41 and 42 probably stem from this crusade.

Open Area M Summary of Architecture and Condition in 1995

Open Area M has been a gathering point in the central part of Cliff Palace for many years during the modern era. The area is defined on the north by a wing of four units angled toward the northwest. The southern side is defined by Rooms 39(1) and 40(2), and Miscellaneous Structure 4 (a wall added to the west side of Room 39(1), which served to separate Open Areas M and K). The dimensions of Open Area M are:

Length and axis: ca 7.00 m E-W

Width and axis: 4.5 m N-S

Enclosed floor area: 31.5 m^2

Headroom: 2.5 m or more

Walls

Most wall construction attributes have been presented as part of surrounding rooms or other units, and the eastern facade was discussed as part of Open Area 6. The remaining information on the walls of Open Area M relates to the surface treatments of wall surfaces, especially the north and south facades. In addition, Miscellaneous Structure 4 is described here.

Originally, the northern facade of Open Area M was built as a single unit consisting of three rooms and an open area. The original portion of the wall was plastered with a light gray (5YR 8/1) plaster that was painted. Unfortunately, very little of this painting remains, only a portion of a design opposite Room 48(1). Some of the fallen stone from this wall was used by Fewkes' crews to stabilize Kiva M, incongruously bearing the designs in impossible locations. Fewkes also capped the northern facade wall.

The southern facade on the exterior of Rooms 39(1) and 40(1) was plastered and painted with the same colors. The only design that can be deciphered at this point is a row of faint handprints above the doorway to Room 40(1). Between four and six handprints are present. If these were stamped, they are quite small and probably belonged to children. However, they may have simply been painted.

The north facade of Miscellaneous Structure 4 was not plastered, and was added after the exterior of neighboring rooms was plastered. The wall is of double stone construction, unlike any others in this part of Cliff Palace, a technique that seems reserved for public architecture of late vintage elsewhere. The wall consists of a single sector, although there are a few stones that were placed using dry-laid techniques. Since Open Area K is of higher elevation than Open Area M, Miscellaneous Structure 4 provides somewhat of a retaining wall function. Dimensions of Miscellaneous Structure 4 are:

Height: 1.40 m

Length: 2.54 m

Thickness: 0.25-0.44 m

Floor

The floor of Open Area M was plastered over in the modern era in order to accommodate visitation. Even so, this surface, which was originally of puddled adobe, has now become crushed to dust. Dampness during the winter of 1995 and 1996 probably contributed to the deterioration. The hearth against the middle of the eastern facade is the sole floor sub-feature. It was probably constructed during the prehistoric period and has been reused in the modern era. It is depicted on the Morse map, below the bedrock boulder that is now heavily sooted.

Condition

The walls defining Open Area M are now in stable condition. Plaster exfoliation may remain a problem, and additional plaster documentation would be useful. The floor within this area has now lost its original integrity, partially as a result of visitor access, and partially because of moisture capillarity coupled with National Park Service efforts to alleviate winter moisture damage. Water and ice had to be removed by hand with buckets when the sluice system froze. Most of the moisture now in this area is below grade, and moves to the eastern wall of Kiva M.

Open Area M Architectural Context: History of Construction and Use

Before the "wings" were built, Open Area M was a larger courtyard that included several other kivas. Rooms 41 and 42 were originally the defining units, against the eastern side of Open Area M. Rooms 44(1) and 45(1) were other units that were probably early. Rooms 39(1) and 40(1) and Rooms 47(1) and 48(1) were subsequently added as wings. Miscellaneous Structure 4 was the last structure built in this courtyard complex, sometime after A.D. 1271 when Kiva K was built. The surface finish and plaster embellishment on the walls around Open Area M indicate that the symbols of social contacts were an important part of whatever took place in Open Area M. The hearth against the eastern side of Open Area M demonstrates that cooking and heating were also important. The chapter summary that follows supplies more detail about the development of Open Area M.

Open Area M and Courtyard Complex M: History of Construction and Use

Courtyard Complex M has a complicated history that we think is tied to kivas around it. This is the area that Fewkes termed the Plaza Quarter, a name that implies some kind of relationship between the kivas. Our interpretation first centers on the development of Courtyard Complex M, and then addresses some of the surrounding units in order to create a context for better understanding the relationships of the structures. Unfortunately, there are very few tree-ring dates for the structures comprising the Courtyard Complex M, and the few that exist are quite scattered.

Courtyard Complex M Core Architecture: Room 42, Room 41, Room 45(1), Room 43, Room 44(1), Room 46

The initial construction of Courtyard Complex M began at the rear of the alcove with Room 45(1) or Room 42 (to which Room 41 may already have been added). Since these units do not intersect, it is not clear which was constructed first. It seems likely that it was the two-room unit that includes Room 41 and 42, since the south wall of Room 43 abuts against the exterior.

Either at the same time or shortly after Rooms 42 and 41 were built, Room 45(1) was added to the southern side of Room 49(1). Room 45(1) was the last in a series of rooms extending southward from the two-room block of Rooms 60 and 148. At the same time, the shared west wall of Rooms 44(1) and 43 was added. The wall was attached against the face of Room 42. A large, elevated open area was created against the exterior of Room 45(1) where Rooms 43 and 44(1) were eventually built.

This segmentation of an open area into Rooms 43 and 44(1) comprises an additional building episode. At about the same time Room 46 was enclosed, eliminating easy access into Open Area 15. Based on tree-ring information, the construction probably occurred in A.D. 1268, recycling a timber cut in A.D. 1206. The eastern side of Courtyard Complex M had been completed by A.D. 1268. Probably Kiva M had also been built (the tree-ring date of A.D. 1278+L documents a later repair to the ventilator tunnel).

North Wing: Room 48(1), Room 100(2), Room 47(1), Open Area 5(2)

The North Wing consists of four architectural spaces arrayed in two stories: Room 48(1), Room 100(2), Room 47(1), and Open Area 5(2). Three of the units are enclosed, and one was retained as an open area. These units have a complicated history that is connected with courtyards beyond Complex M. For example, Open Area 5(2) was never enclosed, serving as a passageway to link Open Areas M and N. Room 100(2) may have been associated with Open Area M; but the room below it, Room 48(1), appears more closely affiliated with Open Area N, at least in its current configuration. This appearance may have been affected by the modern reconstruction of the west wall of Room 48(1). Room 48(1) was constructed in its particular location to avoid loading the roof of Kiva M, and that seems to reflect social involvements beyond that of a single courtyard complex. The North Wing was constructed after A.D. 1272, based on the tree-ring date from a beam in the roof of Room 48(1).

South Wing: Room 39(1), Room 40(1),

Open Area 32(2), Miscellaneous Structure 4

The South Wing of Courtyard Complex M was probably added after Kiva M was built. The wing consists of Room 39(1), Room 40(1), Open Area 32(2) and Miscellaneous Structure 4. Although Fewkes thought that there was a second story above Rooms 39(1) and 40(1), there is no evidence to indicate that this area was enclosed, so we have designated it as a common open area above the lower units (Open Area 32(2)). This rooftop open area would have provided a platform to gain access to Open Area 14, but not without climbing.

After the other South Wing units were built and used, Miscellaneous Structure 4 was built to separate Open Area M from Open Area K. Since Kiva K was built in A.D. 1271, Miscellaneous Structure 4 was either built that same year or slightly later. This scenario supports our interpretation of the date in the ventilator of Kiva M as a repair rather than a construction date.

Second Story Additions, the Attics: Room 101(2), Room102(2)

Rooms 101(2) and 102(2), the low, second story attic-like rooms above Rooms 44(1) and 45(1), were probably a very late addition to Courtyard Complex M, after A.D. 1272. This assertion is based on the presence of the four wall pegs located high on the exterior west wall of Room 101(2). These were placed as these second story walls were built, but could not have been easily reached without Room 47(1), a late room, having been in place first. Attic-like rooms are also found above a number of rooms to the north, and probably represent collaboration between residents of several courtyard complexes, including Courtyard Complex M.

How the Rooms Were Used: Room Function

In Courtyard Complex M, there were four living rooms, three granaries, four non-food storage rooms, a kiva, two open areas with hearths, two other open areas for access and social gatherings, and one room of indeterminate function. A number of these rooms probably changed function over time. There were also two walls (miscellaneous structures) that demarcated the open areas. Assessments of room function and use in Courtyard Complex M are complicated by the high degree of attention it garnered from early excavators. In some cases, hearths or other evidence of cooking or heating facilities may be attributed to the modern era. The use of clay collars around some of these hearths probably can be confidently linked to the original occupants, even if they were later re-used. Additional information on room use is given in Chapter 7.

Living Rooms: Room 39(1), Room 44(1), Room 45(1), Room 43

Using sooting and hearths as evidence of living rooms, we designated Room 39(1), Room 44(1), and Room 45(1) as living rooms. In addition, Room 43 has some oxidation along the south wall and sooting along the west wall, but the unit seems to have been unroofed. As has been the case in rooms studied so far, Room 39(1) has a doorway that sealed from the exterior, generally a signature for a storage room. Room 44(1) is linked to an open area with a T-shaped doorway, as was Room 45(1) in its original configuration. Wall Entry 21, retained as the way into Room 45(1), sealed from the exterior.

Room 39(1), 44(1) and 45(1) all contain large numbers of wall pegs/peg holes, have niches, and shelves, although often times, these shelves can be characterized as little more than offsets in the masonry where narrow or elongate objects might be stored. In some cases, they may not have served as localities for placing items. The walls of these rooms were also completely plastered.

Granaries, Storage Rooms: Room 41, Room 42, Room 46, Room 47(1) Room 100(2), Room 101(2), Room 102(2)

Rooms 41, 42, and 46 were granaries. All of these units were built at the rear of the alcove. Rooms 41 and 42 retain a thick coating of plaster. The location and size of Room 47(1) suggests that it was also a granary even though there is plaster only on one wall. These units often have a number of wall pegs/peg holes, and one has a diagonal corner tie. Once again, all doorways sealed from the exterior.

At first glance, the low overhead space of Rooms 100(2), 101(2), and 102(2) leads us to assert that they must have served as granaries. This may prove to be the case, since these rooms have an assortment of sub-features or details that are shared with other granaries: plaster, niches, and perhaps wall pegs. Walls are composed of upright slabs or masonry. Access to these units probably came through the southern walls, as opposed to through roof hatchways. If so, these units would not have been vermin-proof unless containerized storage was used to augment the architecture. This suggests that they might have been used for other types of storage.

Indeterminate Room: Room 40(1)

Room 40(1) is a large rectangular-shaped room that has no plaster, contains a few features, and fails to show any signs of a hearth. This remains a room of unknown function that can be studied along with others of similar ilk as work is done elsewhere in the site.

Open Areas

The four open areas in this part of Cliff Palace served different functions. Open Area M was a social gathering spot of some importance given the care with which it was originally painted. The three other areas in Courtyard Complex M are Open Area 6, which contains a collared hearth, Open Area 5(2), which contains a collared hearth, and Open Area 32(2), for which there is no evidence of a formal hearth. The alcove above Open Area 32(2) is heavily sooted, but this deposit may not be linked to what happened in this open area atop Rooms 39(1) and 40(1). In general, it appears that cooking or heating was an important activity associated with the elevated open areas in this courtyard complex. If the winter of 1995-96 was any indication of the normal temperature in this part of Cliff Palace, these facilities were needed. Alcove morphology here is low, and deep, minimizing the degree of solar gain at this part of the site. This situation contrasts with Courtyard Complex J.

The Context of Courtyard Complex M: Other Kivas and Spaces in the Plaza Quarter

Besides Kiva M, there are two other kivas in this part of Cliff Palace: Kiva L and Kiva N. Based on assumptions of proximity between related surface rooms and kivas, there are only three rooms that could have been living rooms associated with Kivas L and N: Room 48(1), Room 49(1), and Room 51(1). These are the only rooms with hearths and the only rooms situated in such a way that they could have served as residential spaces. The remaining rooms on the elongate corridor that extends along the eastern side of Rooms 59 and 64 are probably granaries and storage rooms. These rooms are part of "accretion building," which extended a single row of rooms toward the south, a single room at a time. In addition, Rooms 49(1), 50(1), and 51(1) all have attic-like units above them. Prior to the addition of the north wing of Open Area M, Kivas L, M, and N would have been beneath a shared large open area that extended from the south wall of Room 59 to the north wall of Rooms 39(1) and 40(1). This open area was subdivided in A.D. 1272.

These related construction activities all suggest to us that residential groups using Kivas L, M, and N were collaborating in the construction of this part of Cliff Palace. The room functions and locations may reflect an association among these kiva groups that was not shared with others at the site. This association of related family groups is known from ethnographic pueblo societies as sib clans. Although more work is necessary, and tree-ring dates that might help better place this construction in the thirteenth century are needed, this association seems at least worth examining further as other parts of Cliff Palace are studied in more detail.

The question of spatially associated residential and socio-ceremonial space is perhaps more fundamental than the foregoing scenario suggests. In evaluating the relationships between these various courtyard complexes and "kiva groups" we must acknowledge the possibility, or perhaps the probability, that no residential rooms are necessary and that people in this part of Cliff Palace, at least, simply lived in the kivas.

Chapter 6

The Ledge Complex

The Ledge Complex (Figures 1.1 and 6.1) consists of fourteen rooms, spaces, and structures in Cliff Palace built in at least two construction episodes. These rooms are positioned atop a "free-standing" arch of stone, the ledge, that articulates with bedrock at either end, but is separated from the back of the alcove by a joint. Overall, the ledge is about 40 m long, reaching a maximum width of about 4.00 m towards the center. Nowhere along the ledge is the alcove ceiling more than 1.25 m above the ledge, a height reached only toward the front. The ledge approaches the lower part of Cliff Palace at the northern end, where it is only about three meters above Open Area 46(2). The other end is about 10 m above Open Area K. The middle portion of the ledge is approximately eight meters above Open Areas 15 and 16.

There are nine rooms constructed atop the ledge, with the only access point through an entryway slot above Room 68(1) and Open Area 46(2). At either end of the ledge, these rooms are situated near the front (Rooms 104, 109, 110). A block of six rooms is located toward the rear (Rooms 105, 106, 107, 108, 111, 112). To the west of these rooms is a wall that originally connected the larger rooms at either end. This wall (Miscellaneous Structures 5 and 6, the portions at either end) once formed a corridor against the exterior western part of this small room block. The wall probably originally extended across the entire ledge and screened the crawlway now designated as Open Area 8.

Our interpretation of the architecture on the ledge is consistent with our architectural interpretations for the lower portion of Cliff Palace. We think there was a social change at Cliff Palace, reflected in the architecture, in which the village site was subdivided into at least two or three major parts (sib clans in a moiety or phratry). On the ledge, it appears that the six rooms toward the northern end of the ledge were originally built as individual household storage units (granaries), but we do not know when they were built. At some later date, the three very large quadrilateral rooms were added. . Although there is no dated wood form the Ledge Complex, we think the construction of these large rooms is evidence of the social change that was occurring late in the A.D. 1270s in Cliff Palace, and think this change is well-dated in the lower portion of the site. The three large storage rooms on the ledge were probably used collectively by social groups larger than the household. They may have been used as granaries, for other types of storage, or for specialized purposes about which we know nothing. They seem to have specialized viewsheds.

The units of the ledge complex are:

Room 104

Room 105

Room 106

Room 107

Room 108

Room 109

Room 110

Room 111

Room 112

Miscellaneous Structure 5

Open Area 7

Miscellaneous Structure 6

Open Area 8

Miscellaneous Structure 7

This chapter includes a description of each individual unit followed by a summary of the history of construction and use of the Ledge Complex.

Excavation and Preservation History

Up until our documentation project, rooms along the upper ledge at Cliff Palace had never been numbered or mapped, even though Fewkes (1911:40) discussed them:

> In a shallow crevice in the roof of the cave on a higher level than the roofs of the tallest houses there is a long wall, the front of enclosures that may be called 'ledge rooms.' Some of these rooms have plastered walls, others are roughly laid; the latter form one side of a court and served to shield those passing from one room to another. On this outer wall, about midway, there is painted in white an inverted terrace figure, which may represent a rain cloud. Attention should be called to the resemblance in form in position of this figure to that on an outside wall overlooking plaza C of Spruce Tree House. This series of ledge rooms was probably entered from the roof of a building in front, and the opening or doorway

> above room 66 served as such an entrance, according to several stockmen who visited Cliff Palace in earlier days [Fewkes 1911:40].

The basic description given by Fewkes is accurate, although the access point to the ledge rooms is from the rooftop of Room 68, rather than Room 66 (which is at least partially roofed by the alcove). In addition, there is white paint on the outer wall of the ledge complex, but not obviously in an inverted terrace pattern. The white paint that exists seems to have been applied around certain ventilation ports or windows, or around peep holes or loop holes.

Since Fewkes' report, the only additional observations on the ledge rooms were made by Copeland and Ives (1983) during their study of plaster designs. As part of their report, they prepared a sketch map to help them create proveniences for their observations. They numbered their rooms beginning with Room 1, duplicating the numbers of the first several rooms of the remainder of Cliff Palace, down below. The documentation that we did extends the Cliff Palace numbering sequence such that room numbers begin with 104. We also made a map using an Ushikata ™ transit, and took photographs of the walls wherever possible. The low ceiling, tight quarters, and very poor illumination posed significant challenges in this regard.

Household Storage Units

Room 105

Room 105 is a rectangular storage unit that was built against the north side of Room 106, and is probably the last one built in the household storage group of rooms. The jog in the west wall was placed in order to avoid affecting access into Room 106. The room has masonry on all four sides although it abuts against a bedrock protrusion at the northeast corner. The very low eastern wall simply closed off a constricted portion of the alcove. Average overhead space in Room 105, above the fill level, is only about 75 cm. The alcove ceiling forms the roof of the room, as well as the lintel of the doorway. Floor area is about 2.61 m^2.

Room 106

Room 106 has similarly low headroom, and was originally much larger. It was subdivided to form Rooms 111 and 112. The construction was completed in two stages. The area enclosed by Room 106 walls ultimately became 4.5 m^2, but it was reduced from at least 10.0 m^2. Access into Room 106 was by an entryway that faced toward the northwest, where the ledge itself was accessed.

The west wall of Room 106 is of singular construction among all those on the ledge. Two thirds of its total length was formed by the use of three large vertical slabs heavily coated on both their interior and exterior faces with mud. This construction mode probably does not reflect earlier construction, but probably represents nothing more than the expeditious use of available fallen alcove ceiling slabs. Further, Room 106 was plastered, with both a monochrome and a floor band. Seen by the light of flashlights, the interior plaster in this room is an unusual orange-buff in color, and the floor band was painted in white. The band does not appear to be greater than 0.30 m in height at any point where it was visible, but rodent droppings within this room obscure the floor.

Once Room 106 was constructed, it supplied access to Rooms 107 and 108. After Room 111 was built, Room 106 must have been linked to it through a doorway, but that doorway has now fallen along with the curving southwestern wall of Room 111. With the wall and door destroyed, it would then have been quite difficult to enter Rooms 112 and 107. It is possible that Rooms 112 and 107 fell into disuse, or that the southeast corner of Room 108 was torn out, supplying a new access point for these rooms.

Room 107

Room 107 seems to have originally been built as one room of a two-room unit that extended perpendicularly toward the west from the back of the alcove. The room is very low, and seemingly of limited utility. One jamb of the north-facing doorway consists of a single upright slab. The eastern and southern walls are formed of the alcove wall. The floor area is about 2.1 m^2, but it is difficult to imagine how some of it could have been used.

Room 108

Room 108 was the second of the two-room unit that was built as anchor-point architecture for the rest of the rooms in this block. All walls were of masonry. Originally, access was through the doorway in the northern wall, an area later enclosed by the addition of Room 106. At that point, the southeast corner may have been torn out to supply access to Room 107 as well as this unit. The floor area is 2.04 m^2.

Room 111

Room 111 was built into the northeast corner of Room 106 by adding a curved wall that is now inferred because of a ghost line on the alcove ceiling. A portion of Room 111 would have been against the alcove. Some kind of doorway must have been present in the curved wall in order to provide access from Room 106. None of the

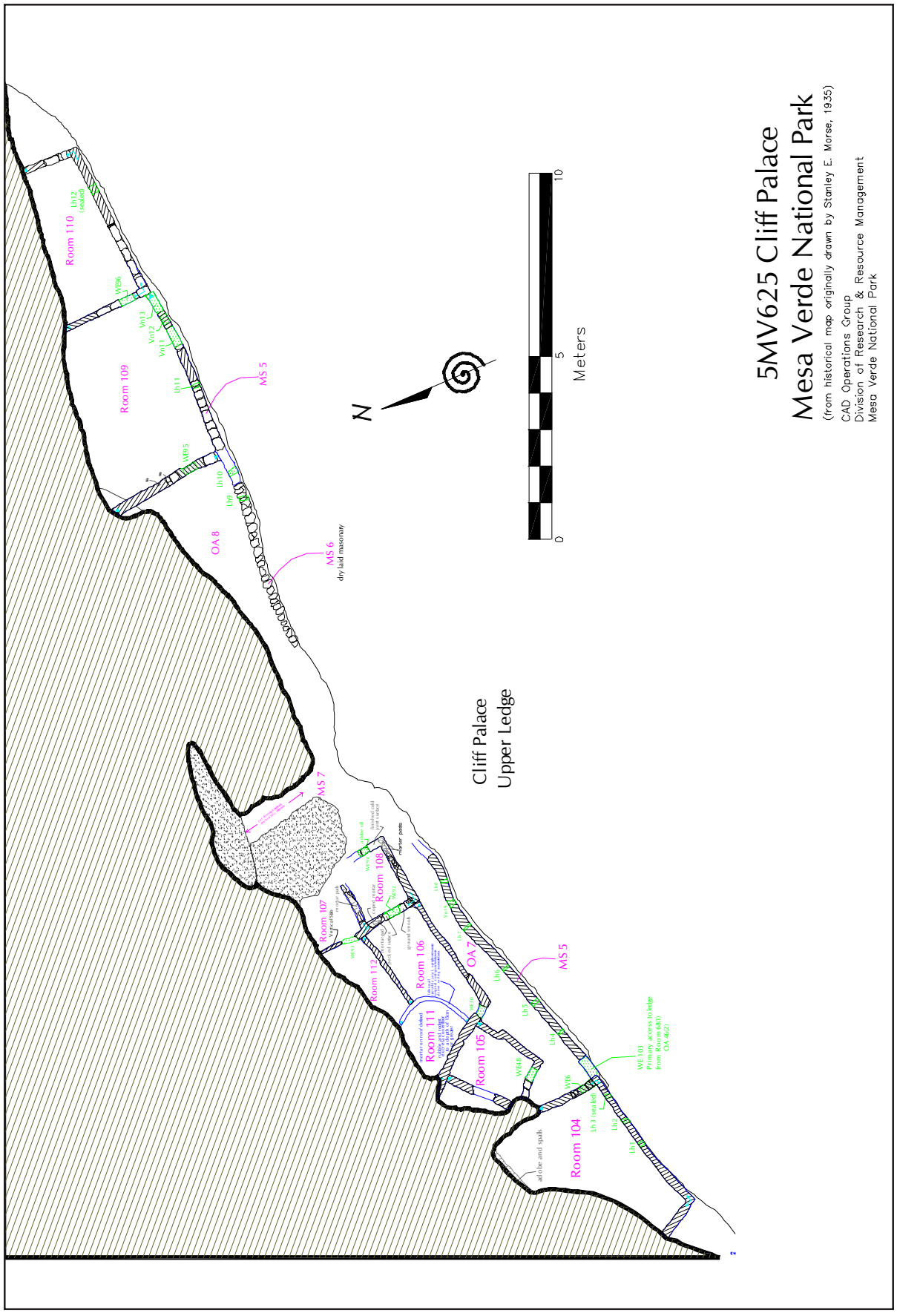

Figure 6.1. Ground Plan of the Upper Ledge Complex at Cliff Palace.

curved wall remains standing above grade. It is possible that the wall was torn out in order to access Room 112 from the northern end if access from Room 107 was blocked. Floor area in Room 111 is 2.5 m^2.

Room 112

Room 112 is so low that it may have been created to segment off unwanted space. It may have been a modification to Room 106 to supplying a second wall against the alcove wall to seal out vermin or moisture. If so, the doorway in Room 107 may simply be an artifact of a time when Room 107 opened to the north, and may have nothing to do with use of Room 112. The east wall of Room 112 is formed of the alcove wall. The other walls are of masonry construction.

Household Storage Units Architectural Context: History of Construction and Use

The six rooms (Rooms 105, 106, 107, 108, 111, and 112) of the household storage units were built in the deepest part of the alcove. Yet, the rooms were built where they were most accessible. Taller architecture was below the storage rooms, and the ledge itself was not too high above the lower part of Cliff Palace. We think people used a ladder from Open Area 46(2), above Room 68(1) to climb to the ledge and storage rooms. What now appears to be a doorway to the south of Room 104 would not yet have been constructed.

The architectural growth of the household storage units was from the southern side of the ledge toward the north. Rooms 107 and 108 were built first. Room 106 was constructed and then subdivided to form Rooms 111 and 112. Finally, Room 105 was added to the exterior of Room 106. Each of these rooms had a ground level doorway in its north wall, and at the time of the original construction, these rooms were entered from the north. When Room 105 was completed, the block containing these six household storage rooms was complete. Whatever space remained unenclosed atop the ledge was a single open area.

Village Group Units

The three additional rooms atop the ledge (Rooms 104, 109, 110) testify to a more involved use of the ledge area. Based on the much greater size of these rooms, and a regularity of layout and symmetry of this construction, these units seem to represent planning on a scale not present in the six small household storage rooms. We have divided the remaining units and spaces atop the ledge into to general areas. Those at the northern end of the ledge include Room 104, Miscellaneous Structure 5 and Open Area 7. Those units at the southern end of the ledge are Room 109, Room 110, Miscellaneous Structures 5 and 6, and Open Area 8.

Miscellaneous Structure 7 is located between Open Areas 7 and 8. It is a trench originally excavated from the front of the ledge to the alcove face. At the rear of the trench is the crack or joint that separates the ledge from the massive bedrock, the back of the alcove. This joint had apparently become filled with sediment that had later been removed, forming a pit over 1.5 m in depth below the surface of the ledge. When the ledge map was overlain across the lower Cliff Palace map, that pit was directly above Room 59, one of the two moiety units, and it seemed possible that this pit represented an attempt to reach the rooms below. Once identified, we thought this gap was dug by Ancestral Puebloans. However, while studying the records later, we discovered that this trench and the pit at the back of the ledge were excavated around 1950 in order to drain moisture from the ledge.

Room 104

Room 104 was built as a freestanding unit against the alcove, with three masonry walls. The fourth wall is formed by the alcove, with some mudding and chinking along the base, probably an attempt to seal out vermin and/or moisture. The doorway in the south wall extends from the bedrock floor to the alcove ceiling, and has two constructed jams. This opening is located where the alcove is the highest, about 80 cm. To the north, the wall is only about 57 cm high. The floor area of Room 104 is about 9.5 m^2.

The west wall of Room 104 contains several features, and shows at least two episodes of construction. Near the floor are two holes that we are calling peepholes or loopholes. These resemble the loopholes of Hovenweep towers (and the ArkDoc 2000 database uses the code LH for this kind of sub-feature, so we are using the term “loophole”). Through these holes various parts of Cliff Palace are visible. It seems unlikely that firing arrows through these holes was ever part of the plan. The southernmost loophole was sealed after it was built. The middle loophole looks directly at the Speaker Chief Complex.

The northern loophole in Room 104 supplies a view of the northwestern entry point into Cliff Palace, including the Kiva W area. It was remodeled from a larger ventilation port that was built north of a finished wall end. This remodeling indicates that the southern part of the west wall of Room 104 was built first. The stub that was placed against this finished end extended the wall to the north, increasing the size of the room, but

also closing off what may have been a second access point to the ledge from Open Area 29. Each of the loopholes seems to have been encircled with white paint on the exterior side of the wall. The stub was patched during the original occupation of Cliff Palace. That patchwork eradicated some of the white paint on the exterior. All of this seems to represent overmuch concern for a household storage room and supports the assertion that this room had some other purpose.

Miscellaneous Structure 5 and Open Areas 7 and 8

Miscellaneous Structure 5 and Open Areas 7 and 8 are connected, since Miscellaneous Structure 5 originally comprised the west wall of Open Areas 7 and 8, extending all the way from near the southwest corner of Room 104 to the exterior northwest corner of Room 109. For Open Area 7, the east side is formed by the exterior facades of Rooms 105, 106, and 108, at least along the north part. Toward the south, the eastern side is formed of alcove wall. Open Area 7 has no real boundary, but we defined the area to extend southward to Miscellaneous Structure 7, the modern trench. The space south of that point has been designated Open Area 8, which was originally defined along the west side by Miscellaneous Structure 5. We believe that the central portion of Miscellaneous Structure 5 failed, and was repaired by the dry-laid wall segment now known as Miscellaneous Structure 6. Ultimately, Miscellaneous Structure 6 also partially failed.

As originally constructed, Miscellaneous Structure 5 formed a parapet wall 19.5 m long, enclosing the front of the ledge. When Miscellaneous Structure 5 was finished, access to the ledge was restricted to a single entryway directly above Room 68. This parapet was built with numerous loopholes, which allowed anyone in Open Areas 7 and 8 to observe most of the lower part of Cliff Palace without being observed. Just as importantly, these holes also admit light and air to the ledge area. Without these apertures, both open areas would have been totally dark. Within the 12.5 m of this wall that remains intact, there are six of these loopholes, many of which are placed at unusual angles, suggesting that they were used for something beyond simple light and ventilation.

Miscellaneous Structure 6

Miscellaneous Structure 6 is now 4.70 m long, and at least a portion of it extends all the way to the alcove ceiling. We think that it once was more than twice that length, and connected both sections of Miscellaneous Structure 5, spanning the gap. One advantage of the dry-laid construction technique selected is that light and ventilation would have been much more easily obtained, without building any loopholes. Subsequently, the ledge again sheared off, pitching the now missing portion of Miscellaneous Structure 6 into the lower site, and probably damaging the roof of units at the southern side of Courtyard Complex P.

Room 109

Room 109 was probably the last to be built of all those units on the ledge. It was constructed after Miscellaneous Structure 5, by adding what is now the north wall, complete with doorway and niche. Under this arrangement, people would have to pass through Room 109 in order to enter Room 110. This room encompasses a floor area of 14.90 m, almost twice the floor space of Room 110. Maximum headroom is 1.06 m.

The most unusual sub-features of Room 109 were the two large ventilation ports or windows in the west wall. They were built by leaving a rectangular space open in the parapet wall and subdividing this space by adding a vertical column of masonry that created two large ventilation ports or windows. On the exterior of the wall around these windows, the buff colored plaster was painted white. This paint was applied in neat straight horizontal and vertical lines in such a manner that the windows were outlined by a white aura that had straight sides and bottoms. It is possible that the unusual construction method used here and the relatively large size of these windows is related to the need to apply this exterior paint. There is no place to stand on the exterior, so the paint would have been applied from the interior of the room.

There also are two smaller ventilation ports or loopholes in the west wall of Room 109. The lower one is beneath the pillar separating the rectangular opening in half, and it was also painted on the exterior, which would have been accomplished by leaning from the opening above. The west wall has a low floor band only 10 cm in height, also painted in white. The remaining interior walls of Room 109 are entirely plastered with pink (7.5YR 7/4) monochrome.

The doorways in Room 109 both seal from the northern side. The one in the north wall thus would have sealed from the exterior, and the one in the south wall would have sealed from the exterior of Room 110. A recycled digging stick, (FS 313) was used as a doorstop rod in the north wall. An additional loose digging stick was found on the floor immediately north of Room 109, in Open Area 8.

Room 110

Room 110 was built at the southernmost end of the ledge, as a freestanding unit. It thus anchors the south end of Miscellaneous Structure 5. A large rectangular room (floor area is 8.00 m^2) with a doorway in the northern wall, Room 110 was left unplastered. It has a loophole in the west wall that was subsequently sealed. The walls were constructed with rough, tabular stone, and maximal overhead space is only about 85 cm. A portion of the west wall has now fallen out.

The Ledge Complex Architectural Context: History of Construction and Use

The Ledge Complex seems to have grown and changed from a space for individual household storage units into a space that was used collectively by the village of Cliff Palace. The household storage units were used for a long enough time to show architectural changes. The earliest household storage units, Rooms 107 and 108, formed an anchoring point for construction on the ledge that extended northward, toward the access point above Open Area 46(2). All entryways face north toward that access point.

After the six household storage rooms were built, Rooms 104 and 109 were built, symmetrically at either end of the ledge. These two rooms share many of the same attributes: similar size, floor plan, and wall features. Rooms 104 and 110 have 9.5 and 8.0 m^2 of floor space respectively. Each of these rooms is twice the size of any of the original storage rooms, and each has an entryway in the corner of the room nearest the lip of the ledge. Finally, Rooms 104 and 109 have view ports or ventilation ports in their western walls. Room 104 has three, one of which was sealed prehistorically, and Room 110 has a single one that was also sealed. These openings were probably painted. Historic photographs show a pale color block around the large ventilation port or window in the west wall of Room 104, but it has since faded.

After the six household storage units and Rooms 104 and 109 were built, a wall (Miscellaneous Structure 5) was built on the lip of the ledge. The wall now abuts the northwest corner of Room 110. We think Miscellaneous Structure 5 was originally constructed along the entire front of the ledge from Room 110 to Room 104. We think that the center part of this wall fell into the main site as portions of the ledge sheared off, probably creating a village catastrophe and damaging the architecture below. We think the walls of Open Area 41(2) and Room 53(1) directly below this area had to be remodeled because of the damage. At the northern end of Miscellaneous Structure 5, an aperture 60 cm wide was left open deliberately, becoming the only access point onto the upper ledge from Room 68 (1).

We think Room 109 was the next addition to the Ledge Complex. The largest room in Cliff Palace, this unit was among the most elaborate, with complete plastering, and paintwork on the exterior parts of the wall. Some of the space in this room would have been sacrificed to supply access to Room 110, if it was still in use after Room 109 was built.

Finally, Miscellaneous Structure 6 was built in order to restore the partition wall across the ledge. The final addition, Miscellaneous Structure 7, was added during the modern era as a preservation measure.

Throughout the use of the ledge, access was probably through the opening above Room 68(1), probably by a ladder in Open Area 46(2). Room 68(1) itself is an interesting piece of architecture. It has two ground floor entryways, one from the north, and one from the south, a highly unusual entry convention. Although these doors do not connect directly with the Speaker Chief's Complex, Room 68(1) is adjacent to the Speaker Chief Complex and is an anchor point for its architecture.

Much of the architectural development of Cliff Palace suggests that the Speaker Chief Complex had origins in residential or household architecture, but that it somehow acquired social importance beyond the individual household. Unique to Cliff Palace and perhaps to Mesa Verde, this structure is important in interpreting the Ledge Complex. Access to the Ledge Complex may have been controlled by the people of the Speaker Chief Complex even though there is no direct doorway linkage. Although we do not know what may have been stored on the ledge, one possibility is village food that might be distributed during lean times.

The remaining loop holes, with their potential for strategic viewsheds, the application of exterior white paint and how much trouble it would have been to apply, all raise intriguing questions about this part of the site and how it might have been used in the late A.D. 1270s. Given some of these contextual factors, merely defending village food stores seems perhaps too simple.

Chapter 7

Conclusions and Directions for Future Research

Our study of the "tapestries in stone" at Cliff Palace has provided new data for studying life in the thirteenth century. We think that masonry studies on a well preserved Ancestral Puebloan site such as Cliff Palace are analogous to extracting information from crafted fabrics, whether the findings are pictorial in nature, or merely tied to the ways that those fabrics were manufactured. However one views the analogy between architectural studies and the study of fabric tapestries, we think that this kind of architectural work is important to the study of past society.

This chapter presents our interpretations of architectural spaces in Cliff Palace and how they help us to understand Ancestral Puebloan life. We revisit the major components of the model introduced in Chapter 3: construction materials, wall sectors and masonry style; wall segments and construction history; rooms and room function; room suites and households; courtyard complexes; two- or three-part social divisions; the village of Cliff Palace; and the Mesa Verde Community surrounding Cliff Palace, applying the concept of localization. We discuss the ways in which the original models have been modified as work unfolded, and suggest avenues for additional research. Much of this work is now underway at Cliff Palace and other Mesa Verde alcove sites.

Although we did some level of work throughout Cliff Palace, the closest scrutiny was reserved for Courtyard Complexes J and M, and for the ledge rooms. At this point, we think that Cliff Palace had a resident population of about 25 households. We also think that the 100-150 people of these households served as caretakers or managers of Cliff Palace throughout most of the year, and that there were seasonal gatherings involving 200-300 people. During these celebrations at Cliff Palace, we think it likely that the visitors used the kivas as short-term residential spaces. We are uncertain as to the role played by the large rooms of the Ledge Complex, but suspect that it is probably related to the central role played by Cliff Palace at these celebratory times of year.

The Models and Their Modification

Analytical Model for Understanding Prehistoric Technological and Social Parameters

The structures in Cliff Palace are the direct outcome of the behaviors and decisions of Ancestral Puebloan people. We used two models to help us understand, classify, and interpret the prehistoric construction components. The first of these is a hierarchical social and architectural model. It begins with observations of stone, mortar, plaster, and wood; proceeds to analysis of walls and wall segments, to rooms and room suites, to courtyard complexes and villages (Figure 3.1). We have used this model to characterize masonry style, examine room use and function, evaluate room suites and larger architectural and social units, and characterize the village unit. Research can begin at any level within the hierarchy, and can move upward or downward to study levels of differing complexity. The model is the beginning of attempts to evaluate masonry architecture in an archaeological context. As our research at Cliff Palace progressed, we reformulated our model in several ways based on what was observed

Activity Analogue or Behavioral Chain for Building Ancestral Puebloan Structures

The second model that we used to interpret the architecture at Cliff Palace was one that identifies and categorizes the activities and behaviors associated with procuring and processing construction stone, adobe mortar, and wood (Figure 3.2). The constructed masonry house is the result of all of these activities coming together at certain points to build walls and roofs. We spent less time looking at this model because collection of the data is more complicated and labor intensive. Nevetheless, we have conducted some of the fundamental studies in this regard, and have included some of the results as Appendices B and C. A few observations are found interspersed throughout this chapter, as well.

Modification of the Oak Tree House Model

We found the interpretation of Cliff Palace architecture more complicated than Oak Tree House. When we started our work at Cliff Palace we were using Figure 3.1, a template that had been used at Oak Tree House, a much smaller site of about 55-60 rooms with seven or eight contemporaneous kivas. At Oak Tree House, the courtyard complex was the primary architectural unit and these could be defined easily: each courtyard complex consisted of a kiva surrounded by at least one room suite of several component rooms. Coupled with the concept

of the unit pueblo developed by Prudden (Prudden 1903), there was a "cookie cutter" flavor to perceptions about each kiva and its surrounding rooms. In sharp contrast, in our work at Cliff Palace we found kivas had no surrounding rooms. In some cases, this was due to structural preservation factors, but in others, it was because of decisions by the Ancestral Puebloan builders concerning placement of individual rooms and structures.

At Cliff Palace, we also identified several kinds of buildings that differed from the basic household residential units at Oak Tree House. Some of these architectural divisions or specialized buildings, such as the "Speaker Chief Complex," had been recognized for some time. We found others. In each case, we attempted to match the architectural interpretations with a social unit identified ethnographically in Puebloan society. We linked our social interpretations to the architectural observations.

In search of architectural and social context for the two courtyard complexes (Courtyard Complex J and Courtyard Complex M) that are reported in this pilot study, we often ranged throughout Cliff Palace to evaluate architectural construction sequences and use patterns. Often, we thought about unusual or unique structures in light of the architectural models. Within Courtyard Complexes J and M, we were most concerned with room function and room suite studies. The data that we assembled on construction elements and wall sectors are in the Mesa Verde National Park files, and have been merely been summarized in this report. These levels of the model are quite labor-intensive to derive, and only accrue context when much broader parts of the site have been studied.

Construction Materials, Wall Sectors, and Masonry Style

During our project we found new information regarding construction materials and wall sectors, two closely interwoven units of the model.

In some walls, we found cold joints in the construction work. These form a horizontal seam between two courses of a masonry wall, which represents the top of a construction episode, probably the point at which a wall under construction was allowed to cure. Normally, these cold joints can be identified by a somewhat convex top if the wall is viewed in cross-section, with the upper mortar overlying the stones and mortar below. The height of a single span of masonry isolated by two cold joints is variable, but generally ranges between 45 and 60 cm. In some cases, these cold joints can help to identify wall sectors, but it is uncommon for the masonry styles on either side of a cold joint to differ. This probably means that normally, the same mason built an entire wall.

In a few cases, however, we think that it is possible to delineate when a number of stone masons collaborated to build a single wall. At this point, the number is limited to recognition of the styles of only two masons on any single wall segment, which resulted in the assignment of different sectors, even though they were not separated by a cold joint. An example within Courtyard Complex J includes the walls of Room 28(1), wherein localized bands of chinking stones are quite different from areas of the surrounding masonry.

Considering the stabilization records and evaluating the existing work on-site, we have identified several areas of Ancestral Puebloan maintenance and repair. One of these is in Kiva M, along the eastern side. We think that this work was done in response to past episodes of dampness similar to the one that initiated this project. Another one is in the north wall of Open Area 41(2), which probably resulted from damage occurring as the architecture on the ledge collapsed into the lower site. From our study of tree-ring dates, we recognized other incidents of repair.

Based on field observations of the stabilization work done during the twentieth century, usually identified as a separate wall sector, we think that there has been much less modern work done in Cliff Palace than was previously thought. The major exception lies in Fewkes' reconstructions of the upper portions of kiva walls, and his patches of holes in room walls. For most of these, we have been able to identify who did the work and when it was done. Our identifications were based on field observations, coupled with computer manipulation of historical photographs. These interpretations sometimes run contrary to the records research done by Chandler (1989). More work is needed in this area.

Although it is possible to anecdotally delineate such examples of modern and prehistoric repair, and acknowledge the work of multiple workers within single wall segments, the true value of these studies lies in making determinations of style and evaluating material selection in localized parts of the site for comparative purposes. This cannot be done until more of Cliff Palace has been studied.

Localization of Architectural Attributes in Cliff Palace

The avenues for future work in Cliff Palace have to do with localization of various building techniques and practices, including masonry styles. Future research may also extend to other, more complex levels of the model. What does such localization in terms of building design

and execution mean? We are using the term "localization" to refer to specific architectural attributes that reflect practices that are found in different frequencies throughout the different parts of the site. These attributes are then viewed as being localized. We think that most localization is related to room function, time of construction, or social association.

Room Function

The most fundamental localization dimension is room function. Are certain building practices tied to the builder's antecedent templates about the proposed functions or uses of a planned space? These practices might entail such choices as using pecked stones for finished building exteriors because these stones produce an aesthetically pleasing surface that can be more easily embellished by plastering or painting the plaster.

Time of Construction: Temporal Signature

Localization of practices within the site might also represent a differing temporal signature. This approach has been stated for Mesa Verde in several forums, although generally the applications are too general to be of much use for working within small blocks of time. For example, pecked stones are thinkd to postdate A.D. 1100, and one might surmise that the observation of pecked stones in a building help to place it in time. We think other architectural attributes could be related to time of construction such as:

when did the T-shaped doorway develop;

when did compound wall construction develop; and

which of these two developments occurred first?

Resolution of these issues is connected with our ability to date individual parts of large sites such as Cliff Palace.

Social Association

Localization of building practices within a site may also be a signature of social association. For example, most of Cliff Palace was not built with pecked stones. Interior residential spaces or those at the rear of the alcove had almost no view, and consequently were not embellished. The various social scales thought to be related to kivas are another example. At each level of the model, the social dimension should be investigated, even if it is not always possible to match a social unit with an architectural one.

Wall Segments and Construction History

A wall segment is defined by a top and a bottom, and also by two ends, if the wall abuts against earlier units. Each wall segment represents a single construction episode that is done in order to alter the ways that space within a site is used or partitioned. A wall segment may consist of one or more sectors.

Studying the wall segments at Cliff Palace is the primary way in which the site's construction history is revealed, especially when coupled with tree-ring dating. Wall segments are demarcated on the maps for each unit studied, generally by shading and an abutment triangle.

The following synopsis reviews our interpretations of each of the courtyard complexes based on the data from individual wall segments. We also discuss architectural context from nearby portions of Cliff Palace. In some cases, this additional contextual information slightly alters our original interpretations. Tables 7.1 and 7.2 supply a synopsis of what is now known about each individual architectural space or context in Cliff Palace.

Courtyard Complex J Construction History

Anchoring or core architecture for Courtyard Complex J unit was formed by Rooms 36(1) and 126(2)(the circular tower), Rooms 20(1) and 125(2), and Rooms 25, 26, 27. Remaining units were fitted into the intervening spaces. The only construction date for this core architecture is found in Room 20(1), which actually has two disparate dates: A.D. 1240 (FS 327), and A.D. 1274 LB (FS91). Taken in isolation, it is unclear whether Room 20(1) was built in either of these two years, but the construction date for Kiva E helps in interpretation, with ventilator lintels all cut after A.D. 1273. Even if some of these are the same log cut into handy lengths, it seems likely that Kiva E and Rooms 20(1) and 125(2) were built in A.D. 1274 or shortly afterward.

This interpretation of the tree-ring dates means that all walls in the south wing of Courtyard Complex J were built no earlier than A.D. 1274, even though Kiva J itself was probably built in A.D. 1271. This assertion comes from the single tree-ring date within Kiva J (FS 453), identical with the construction date of Kiva K, located to the north. This implies that Rooms 25, 26, and 27 had been built no later than A.D. 1271, and probably Rooms 36(1) and 126(2) were built at that same time as part of Courtyard Complex K. Rooms 29(1), 28(1), and 37(1), with their second story units were built simultaneously or shortly thereafter.

Table 7.1. Construction Dates of Units in Courtyard Complex J.

Unit Designation	Dating Parameters
Rooms 21(1) and 97(2)	Built between A.D. 1275 and 1278 and after Rooms 22(1), 23(1) and 98(2).
Rooms 22(1), 23(1), and 98(2)	Built between A.D. 1275 and 1278 and after Rooms 20(1), 125(1) and Rooms 25, 26, and 27.
Rooms 25, 26, and 27	Built at some unknown date prior to A.D. 1271 (1260-1270?); completed in the following order: Room 27, Room 26, and Room 25.
Room 29(1)	Built in A.D. 1271 -1272.
Open Area 4(2)	Built in A.D. 1271 –1273, subdivided in 1273.
Rooms 28(1) and 99(2)	Built in A.D. 1272-1273.
Miscellaneous Structures 1 and 2	Built between A.D. 1275 and 1278.
Kiva X	Built and filled prior to A.D. 1271, probably in conjunction with Rooms 25, 26, and 27.
Kiva J	Built in A.D. 1271.

Table 7.2. Construction Dates of Units in Courtyard Complex M.

Unit Designation	Dating Parameters
Rooms 41 and 42	Built before A.D. 1268, Room 42 is earlier than Room 41.
Room 45(1)	Built before A.D. 1268, and after Room 49(1).
Rooms 43 and 44(1)	Subdivided in A.D. 1268.
Room 46	Built between Rooms 42 and 45(1) probably ca. A.D. 1268.
Rooms 39(1) and 40(1), Open Area 32(2), Open Area 6 and Miscellaneous Structure 3	Built after Room 41, date otherwise unknown, but probably about A.D. 1268; before A.D. 1271.
Rooms 47(1), 48(1), 100(2), and Open Area 5(2),	Built after A.D. 1272.
Rooms 101(2) and 102(2)	Built after Rooms 47(1), etc., and after A.D. 1272, along with Rooms 103(2), 131(2) and 132(2) from other courtyard complexes.
Miscellaneous Structure. 4	Built in A.D. 1271 or later.
Kiva M	Probably built in A.D. 1268 or 1269; repaired in A.D. 1278.

In this scenario, the southern wing of Courtyard Complex J was built in two stages, both of which occurred after A.D. 1274. Rooms 21(1) and 97(2), in particular, were built much later, and their size was purposely kept small to permit access into Open Area E and Kiva E. Later, this accessway was eliminated by the construction of Room 19(1) and Open Area 13(2). Miscellaneous Structure 1 was added very late.

Kiva X was built earlier in the history of Cliff Palace and is not considered part of Courtyard Complex J. Any residential space associated with Kiva X must have included Rooms 25, 26, and 27, and possibly Rooms 28(1) and 29(1), but definitely not Rooms 20(1), 125(2), or units of the south wing.

Courtyard Complex M Construction History

Courtyard Complex M was added to a group of rooms built along the rear of the alcove, extending southward from Rooms 60 and 148, well to the north. Room 45(1) was the first of the Courtyard Complex M units to be built, perhaps built along with Rooms 41 and 42. Rooms 43, 44(1), and 46 then followed as single-story units. In particular, Rooms 43 and 44(1) were a single larger unit that was subdivided by the wall that supplies a building touch point for all rooms in this block. This wall was probably built in A.D. 1268 (FS 148 and 149), although there is an earlier date of A.D. 1206 (FS 146 and 147). We think that this earlier date is derived from recycled wood, based on the construction date of Kiva N at A.D. 1269 (FS 486-490). This all suggests that the single date of A.D. 1278 (FS 481) from the ventilator of Kiva M also represents repair.

The block containing Room 47(1), Open Area 5(2), Rooms 48(1), and 100(2) was built after A.D. 1272 (FS 157). This construction event could have been in A.D. 1278, when Kiva M was repaired. Both dates from Rooms 40(1) and 39(1) are of modern origins. The addition of Rooms 40(1) and 39(1) almost certainly occurred no later than A.D. 1271 or A.D. 1272, when Kiva K was built. Miscellaneous Structure 4 was added in or after A.D. 1271.

The attic-like rooms above Rooms 44(1) and 45(1) in this complex, and those further to the north, were probably added sometime after A.D. 1272. This is inferred because the wall pegs embedded into the mortar outside of Room 101(1) could not have easily been reached without the north wing addition in place, partially subdividing Open Area N from Open Area M. We think that these second story attic-like rooms represent the collaboration of the residents of more than one courtyard complex. Hypothetically, this might include Kivas M and N.

Architectural units in Courtyard Complex P, to the north and west of Kiva N were built later, in A.D. 1273 or 1280. We have no date for Kiva L, which seems to have no associated residential space. One possible scenario is that Kiva L was inhabited or used by another collaborating group.

Rooms and Room Function

The functional room classes that we have identified include: living rooms, granaries, storage rooms, and mealing rooms. In addition, kivas comprise a separate room class, assumed to have socio-ceremonial significance and possible residential utility. It was assumed that enclosed spaces would each be assigned to one of these classes, if known, or simply fall into a class of spaces of unknown function.

As work at Mesa Verde has progressed, the importance of open areas has been increasingly pondered, and we began by subdividing these at least partially unenclosed areas into two general classes. These are the:

> courtyard or plaza: a larger area of social significance that would perhaps be adorned by symbols or embellished by more ornate wall finishes or more careful work; and
>
> work area: a smaller area used by a smaller group, and containing utilitarian features such as hearths, grinding slicks or bins, etc.

As the room count for Cliff Palace was reduced, increasing numbers of open areas were designated. We discontinued the original practice of using alphabetical nomenclature to refer to these spaces. Those open areas atop kiva roofs retained alphabetical nomenclature, but numerals were used for those smaller areas, which were often times on rooftops or in elevated settings.

As work progressed, we thought that the presence of a hearth or evidence of sooting was the best place to begin when addressing issues of surface room function. A hearth is the only sub-feature that was found in only one class of surface rooms. This approach was confounded somewhat by the modern-day re-use of some units by relic hunters, who camped in the site, undoubtedly re-using some of the earlier hearths, if not creating new ones in proveniences that never had them. We have attempted to identify those units in the inventory of spaces. Other problems associated with living rooms became apparent as we worked. They often had doors that sealed from the exterior, some had plaster and some did not, they were located in various locations and had various size parameters, and shared many other sub-features with rooms that had no hearths and by definition

were assigned to other classes. In addition, in some cases, room function probably changed.

Generally, the most significant attribute used to identify a living room is a hearth or evidence of having been the scene of cooking or heating, such as a sooting or oxidation plume. Tables 7.3 and 7.4 list the living rooms in each courtyard complex, along with some of their other characteristics. All of the living rooms were located on the first story.

Comparing the information given in Tables 7.3 and 7.4 suggests a few other commonalities besides the hearths, but it remains to be seen whether the frequencies of certain wall sub-features, or unit sizes differ substantially from other possible functional classes for enclosed spaces.

One would expect some degree of localization in the attributes of living rooms when comparing the two courtyard complexes. For example, plastered wall

Table 7.3. Attributes of Living Rooms in Courtyard Complexes J.

Room Number	Walls		Head-room (m)	Floor		Floor Area(m^2)
	Finish/Details	Sub-features		Sub-features	Construction	
Room 21(1)	Dado (3 walls)	3 wall pegs	1.77	Corner hearth, coping	Puddled adobe	2.88
Room 23(1)	Plastered (earlier construction)	None	1.80	Corner hearth, coping	Puddled adobe	6.15
Room 25	Dado (2 walls)	3 wall pegs	2.02	Two corner hearths, 1 w/ coping	Buried	2.92
Room 26	None	None	1.72 +	1 corner hearth	Buried	2.23
Room 27	Dado (2 walls)	3 wall pegs	2.14 +	1 corner hearth	Buried	4.59

Table 7.4. Attributes of Living Rooms in Courtyard Complex M.

Room Number	Walls		Head-room (m)	Floor		Floor Area (m^2)
	Finish/Details	Sub-features		Sub-features	Construction	
Room 39(1)	Full-wall Monochrome (4 walls)	11 wall pegs, 2 vents. Ports, 2 niches, 1 loop	1.85	Corner hearth, coping	Puddled adobe	6.18
Room 44(1)	Full-wall Monochrome and dado (4 walls)	6 wall pegs, 2 vent ports, 1 niche, 1 loop, 3 “shelves”	1.90	Corner hearth, buried	Puddled adobe	4.17
Room 45(1)	Full-wall Monochrome (1 wall), and unidentified (1 wall)	8 wall pegs, 3 niches, 3 “shelves”	1.90	Midwall hearth, possibly modern	Puddled adobe	5.50

treatments are more extensive in Courtyard Complex M, as is the array of wall sub-features. Although there are very few spaces involved, it appears on the surface that in Courtyard Complex J, floor areas may be bimodally distributed. This may reflect sequential changes in room function.

In some cases, we feel confident in our other assertions regarding assignments of rooms to functional classes, but most often they rely on some isolated factor or set of factors that we think is unusually compelling. These factors tend to be related to size and location, rather than to an array of sub-features. If the remaining rooms (i.e. those without hearths) from both courtyard complexes are considered together, they seem bimodally distributed with respect to rooms with hearths. One set of room sizes ranges between 2.00 and 3.00 m^2.

Room 97(2) (Courtyard Complex J): 2.88 m^2

Room 47(1) (Courtyard Complex M): 2.62 m^2

Room 41 (Courtyard Complex M): 2.58 m^2

Room 46 (Courtyard Complex M): 2.12 m^2

The second set also consists of four rooms, with a size between 5.00 and 6.00 m^2:

Room 29(1) (Courtyard Complex J): 5.78 m^2

Room 40 (1) (Courtyard Complex M): 5.44 m^2

Room 99(2) (Courtyard Complex J): 5.23 m^2

Room 28(1) (Courtyard Complex J): 5.23 m^2.

None of these rooms has even a single floor feature. Each group is three times as likely to have wall plaster as not, and each group has wall pegs. The smaller rooms tend to have more shelves and niches. One large room has a ventilator. Needless to say, this is a mixed group of results, and a small sample of rooms.

The differences in room function seem more related to which complex the units belong to than to possible unit functions, since there are more small rooms in Courtyard Complex M than in Courtyard Complex J. The question then becomes one of localization that is unrelated to function, and might be linked either to temporal signature, social association, or to some other factor. The sample size must be increased to approach these issues, although it seems likely that the units from each courtyard complex were built about A.D. 1268 and before 1278. This short time span suggests that room size is unrelated to temporal factors.

Doorway Design and Construction

Doorways have often been used as a major contributing entity to assessments of room function. Unless roof hatchways are a major strategy for entry into multi-storied buildings, the most salient aspect is whether they seal from the interior or the interior (Dean 1969). There is little evidence of use of roof hatchways at Cliff Palace, and in almost every case, an alternative entry mode seems more likely. Two-story buildings generally have a lateral entry through the wall, possibly fronting onto a balcony. The sole possible exception to those units studied is in the attic-like units in Courtyard Complex M. In each case, it seems likely that wall configurations were altered in order to provide access or an exit point for smoke.

With the exception of T-shaped doorways, all the doorways in Cliff Palace are rectangular, although in some cases, they were constructed slightly differently, and may not have had a lintel, appearing as slots in the wall. Exterior closure is almost a universal feature, whether the units are associated with heating/cooking facilities or not. We have selected a few attributes in an attempt to create doorway subclasses, and have used those doorways associated with cooking facilities to create a living room doorway "type" signature against which other doorway subclasses might be compared. The attributes that we examined are:

Jamb construction;

Sill height above floor or stepping assistance device (toeholds, step stones, etc);

Presence/absence of stepping assistance device;

Presence/absence of a doorstop rod; and

Height-Width Index (HWI) (doorway height/ doorway width X 100)

As far as is known, no one has tried working with these attributes within an alcove site from the Mesa Verde area, so it is difficult to predict the results. However, one would expect the following: (1) higher sill-to-lintel doorway height in living rooms; (2) exterior steps associated with granaries; (3) higher sill-to-floor heights in granaries. Attributes are summarized in Tables 7.5 and 7.6 for the two courtyard complexes. Alpha codes used are given in Nordby et al. (2000), and described in the text later in this chapter.

The HWI values for the two complexes are comparable, but the sample is too small to demonstrate any association, especially considering that one of the doorways from Room 45(1) was remodeled from a T-

Table 7.5. Rectangular Doorway Attributes from Living Rooms in Courtyard Complex J.

Unit	Wall Entry Desig-nation	HWI (Height/ Width x100)	Jamb Construction	Doorstop Rod (P/A)	Sill Height to floor, step, or both	Step (P/A) and side (Int/Ext)
Room 21(1)	WE 7	179.02	Composite: 2 (US+MC)	P	.48 (S>TH); .34(TH> floor)	P: TH(Int)
Room 23(1)	WE 5	169.00	Composite: 2 (US+MC)	P	.70 (floor)	A
Room 25	WE 4	165.00	US: 1 MS: 1	A	.70 (fill)	A
Room 26	WE 3	121.30	Composite:1 MS:1	A	.54 (fill)	A
Room 27	WE 2	163.64	MS: 2	A	.74 (fill) .54 (Orig. Fl)	P: ST(Ext)
Mean Value	-----	159.59	--------	----	.69 (total to floor only)	-----

Table 7.6. Rectangular Doorway Attributes from Living Rooms in Courtyard Complex M.

Unit	Wall Entry Desig-nation	HWI (Height/ Width x100)	Jamb Construction	Doorstop Rod (P/A)	Sill Height to floor, step, or both	Step (P/A) and side (Int/Ext)
Room 39(1)	WE 30	192.00	Composite: 2 US+MC:2	P	.35 (S>TH) .51 (TH>Fl)	P: TH (Int)
Room 45(1)	WE 24 (west)	150.00	US: 1 Composite:1	A	.30 (S>Nc) .53 (Nc>Fl)	P: Nc(Int)
Room 45(1)	WE 21 (south)	173.00	US: 2	A	.80 (floor)	A
Mean Value	-----	171.67	-----	----	.83 (floor)	-----

shaped doorway. The sill heights are compromised by modern era floor level changes in Rooms 25, 26, and 27. All three doorsill heights from Courtyard Complex M are between 80 and 86 cm, a potential pattern. Room 21(1) and even Room 23(1) have similar values.

Jamb construction for all of the living rooms in Courtyard Complex M relies on upright slab (US) construction, often augmented by a single course of masonry above it. We have used the term composite for these jambs of mixed construction. This same pattern pertains to Rooms 21(1) and 23(1), but doorways from Rooms 25, 26, and 27 rely more heavily on several masonry courses (MS).

To summarize the data in these two complexes, it seems likely to us that floor area, jamb construction differences, and a slightly lower HWI value suggest that in spite of the presence of a hearth in each of those units, Rooms 25, 26, and 27 were originally built as storage units for Courtyard Complex J. Later, they were converted or used as living quarters where cooking or heating was important. Removing these three units from the living room type examples points more clearly to a type pattern for rooms built to function as living rooms.

Living rooms have a sill-to-floor height of approximately 80.2 cm., a mean HWI of 172.6, and use a technique of jamb construction that consists of upright

stones surmounted by at least a single course of masonry. Doorstop rods are present in three of five cases, and interior stepping aids are also present in that frequency. To pursue this argument, we must look at the same doorway attributes for other units of the sample. Tables 7.7 and 7.8 supply the same data for rooms without hearths. An additional column is added for room size.

Table 7.7. Rectangular Doorway Attributes from Rooms Without Hearths in Courtyard Complex J.

Unit	Wall Entry Desig-nation	HWI (Height/ Width x100)	Jamb Construction	Doorstop Rod (P/A)	Sill Height to floor, step, or both	Step (P/A) and side (Int/Ext)	Unit Floor Area
Room 97(2)	WE 9	-----	Unknown: 1 MS: 1	-----	.50 (floor)	A	2.88
Room 98(2)	WE 8	-----	Unknown: 1 MS: 1	-----	.38 (floor)	A	7.17
Room 22(1)	WE 6	166.2	Composite: 2 (US+MS)	P	.12 (S>STP) .63(STP>FL)	P:TH (int)	4.75
Room 28(1)	WE 16	184.0	US: 2	A	.71 (floor)	A	5.23
Room 99(2)	WE 17	173.3	US: 2	P	.60 (floor)	A	5.23
Mean Value	-----	174.5	-----	-----	.588	-----	5.05

Table 7.8. Rectangular Doorway Attributes from Rooms Without Hearths in Courtyard Complex M.

Unit	Wall Entry Desig-nation	HWI (Height/ Width x100)	Jamb Construction	Doorstop Rod (P/A)	Sill Height to floor, step, or both	Step (P/A) and side (Int/Ext)	Unit Floor Area
Room 40(1)	WE 18	218.00	Composite: 2 (US+MS)	A	.37 (S>TH) .46 (TH>Fl)	P: TH(int)	5.44
Room 41	WE 19	181.00	plastered	P	.38 (floor)	A	2.58
Room 42	WE 25	133.00	MS: 2	P	.57 (floor)	A	3.80
Room 46	WE 22	137.00	MS: 2	A	.55 (floor)	A	2.12
Room 47(1)	WE 62	131.00 (stab?)	Composite:1 MS:1	?	.62 (floor)	A	2.62
Mean Value	-----	160.00	-------	-----	.59	-----	3.11

Comparing the Height Width Index (HWI) Values

In this small sample size, which contains several units that probably changed in function, it is difficult to identify a pattern when comparing the attributes for rooms with hearths, thought to be living rooms, with those that lack hearths. For example, in Courtyard Complex M, the living rooms have a higher HWI value, but the opposite is true in Courtyard Complex J unless Rooms 25, 26, and 27 are categorized as storage rooms and the remodeled opening for Room 45(1) (WE 24) is eliminated. If so, the mean HWI of the remaining four openings is 178.2. The HWI of the remaining units of these two complexes is 161.2. This conforms to our sill-to lintel-height expectations.

More importantly, these HWI values seem to be bimodal, suggesting that the remaining units are of more than one functional class. Those units with HWI values well near or below the mean of 161.2 are listed in Table 7.9, and those with HWI values well above the mean are given in Table 7.10.

We think that the foregoing units may well be of a single room type class (granaries) that has a mean HWI value of 141.82 and a floor area of 3.05 m^2. In these six rooms, stop rods are absent in four of five cases that have evidence. Interior stepping assistance is totally absent. The mean sill-to-floor height of these units is 57 cm, for those four cases with evidence. Several units in Courtyard Complex M have floors either buried, or removed by excavation. At least some plaster remains on four of the six units, and all but Room 26 have wall pegs or peg holes. One unit (Room 27) may have had a shelf, and one unit (Room 42) has two niches.

Material summarized in Table 7.10 deals with an additional group of units, storage rooms. Overall, these units have a larger floor area than those units listed in Table 7.9, as well as an elevated mean doorway sill-to-floor value. The HWI value for this group is 184.46, even greater than the living room class. The mean floor area value is 4.64 m^2, less than that of living rooms, which average 4.98 m^2, but substantially greater than that of the class of rooms given in Table 7.9. The average sill-to-floor height of the units listed in Table 7.10 is 65.4 cm, intermediate between the living rooms granaries (those in Table 7.9). Two rooms are unplastered, two rooms have light amounts of plaster, and Room 41 was completely plastered. Wall pegs and niches are found, but in relatively small frequencies.

Table 7.9. Summary of HWI Values and Floor Areas for Selected Non-Living Rooms.

Courtyard Complex	Unit	HWI Value	Floor Area
J	Room 25	165.00	2.92
	Room 26	121.30	2.23
	Room 27	163.64	4.59
M	Room 42	133.00	3.80
	Room 46	137.00	2.12
	Room 47(1)	131.00	2.62
Mean Values	-------	141.82	3.05

Table 7.10. Summary of HWI Values and Floor Areas for Other Selected Non-Living Rooms.

Courtyard Complex	Unit	HWI Value	Floor Area
J	Room 22(1)	166.02	4.75
	Room 28(1)	184.00	5.23
	Room 99(2)	173.30	5.23
M	Room 40(1)	218.00	5.44
	Room 41	181.00	2.58
Mean Value	-------	184.46	4.64

It is tempting to ascribe these two provisional functional classes to two of the expected room classes. The smaller one might be a granary, and the larger one could be what a non-food storage room looks like at Cliff Palace. The data given in the last several paragraphs are summarized in Table 7.11, which lists these three provisional classes, serving as a departure point for the future functional evaluation of enclosed architectural spaces at Cliff Palace.

Other enclosed spaces not included in the foregoing discussion generally are those units that do not have any remaining entry evidence: Room 29(1) in Courtyard Complex J and Rooms 101(2) and 102(2) in Courtyard Complex M. These three have somewhat variable floor areas, as follows: Room 29(1), 5.78 m^2; Room 101(2), 4.17 m^2, and Room 102(2), 3.10 m^2. Room 29(1) lacks a hearth, and the other two units have extremely low overhead space, coupled with entryways that probably lacked sealing conventions. These doorways probably were simply slots in the masonry, without lintels or sills. Two had been at least partially plastered, one had wall pegs, and one a shelf. For these reasons, all are classified as storage units for non-food. If these three units are added to the totals in the non-food storage class, the data unrelated to doorways becomes: mean floor area: 4.45 m^2; percentage of units plastered: 71%; percentage of units with wall pegs: 71% %; and percentage of units with shelves: 28.6 %.

Two additional areas in Cliff Palace are second story units with only fragmentary doorway evidence, each of which lacks any evidence of having had a hearth: Rooms 97(1) and 98(2). Based on the criteria of this study, each of these units must be excluded from consideration as a living room. Characteristics of these two units are given in Table 7.12. The low sill to floor height and the masonry block jamb construction suggest that these units are food storage rooms. The floor area of one of these units also supports its assignment into that category. We suspect that the low doorsill to floor height is more a function of location of the room on the second story than an indicator of the purpose of the room. We need more information on second story rooms before we can confidently assign a function.

Needless to say, the numbers of all these rooms are quite small considering the total statistical population of

Table 7.11. Data from Provisional Functional Room Classes in Courtyard Complexes J and M.

Functional Class	Mean HWI	Jamb Construction	Door stop Rod Presence (%)	Mean Sill Height to Floor	Stepping Aid Presence (%)	Mean Floor Area (M2)	Plas-tering/ Details (%P)	Wall Sub-features
Living room (includes data from Room 44(1)*	178.2	US: 25 % Comp: 75 %; All = MC+US	60 %	.80 M	60 %	4.98*	80%*	80% WP* 60%Nc* 40%Sh* 40%Lp* 40%Vn*
Food Storage Room/ Granary	141.8	MS: 75 % US: 8 % Comp: 17 %; All = MS+US	20 %	.57 M	0 %	3.05	67 %	83% WP 17% Sh 17% Nc
Non-Food Storage Room	184.5	US: 50 % Comp: 50 %; All = US +MC	60 %	.65 M	40 %	4.64	60 %	60% WP 60 % Nc 20 % Sh

Table 7.12. Attributes of Selected Rooms in Courtyard Complex J.

Unit	Floor Area (m^2)	Plastering (P/A)	Wall Sub-features	Doorway Sill-to-Floor Height	Jamb construction
Room 97(2)	2.88	P	none	.50 m	MS: 1
Room 98(2)	7.17	P	none	.38 m	MS: 1

about 150 enclosed surface rooms at Cliff Palace. Functional assignments emanating from this discussion can be summarized as shown in Tables 7.13 and 7.14. Column three of each of these tables denotes changes in the functional classes, wherein a room was built with one intention, only to be used in a different way, following the rationale presented in this chapter. In particular, Room 43 probably never served as an enclosed room.

Open Areas

We think of the open area in two hypothetical manifestations: the work area and the courtyard. The work area is a smaller open area that contained working features such as hearths, grinding slicks, or other evidences that utilitarian tasks were performed there. In theory, these tasks would be those that were related to household activities that required good lighting and were not personal in nature, such that they could be visually shared. The second open area, the larger courtyard or plaza, is perceived of as a gathering place where social interactions were executed, and which would probably be larger than necessary to meet individual household needs. Consequently, we think the social group using the plaza was larger than an individual household.

Examples of each kind of open area were encountered at Cliff Palace. The importance of these kinds of spaces grew as our work throughout the site has progressed. Indeed, the numbers of enclosed spaces or rooms was reduced, since a closer look at the evidence for roofs or complete enclosure could not support a commonly invoked room count of about 240 units. Many of these units were redesignated as open areas. As this number grew, we discarded the designation system that used alphabetical indicators for work areas, retaining it for courtyards/plazas, to reflect those open areas that were located atop kivas.

Each of the courtyard complexes that we have studied consists of one kiva rooftop courtyard and an additional rooftop unit. In addition, Open Area 32(2) is thought to be a rooftop space created atop two rooms in Courtyard Complex M. Open Areas 4(2), 5(2) and 6 are the other units. Summary information on these open areas is given in Table 7.15.

Table 7.13. Summary of Functional Assignments for Enclosed Spaces of Courtyard Complex J.

Unit Designation	Functional Class	Comments
Room 21 (1)	Living room	
Room 97(2)	Unknown	Possibly storage
Room 22(1)	non-food storage room	
Room 23(1)	Living room	
Room 98(2)	Unknown	
Room 25	Granary	Built as granary, functional change to living unit
Room 26	Granary	Built as granary, functional change to living unit
Room 27	Granary	Built as granary, functional change to living unit
Room 28(1)	non-food storage room	
Room 99(2)	non-food storage room	
Room 29(1)	non-food storage room	

Table 7.14. Summary of Functional Assignments for Enclosed Spaces of Courtyard Complex M.

Unit Designation	Functional Class	Comments
Room 39(1)	Living/habitation room	
Room 40(1)	Non-food storage room	
Room 41	Non-food storage room	
Room 42	Granary	
Room 43	Probably an open area	Originally a larger open area, along with Room 44(1)
Room 44(1)	Living room	
Room 101(2)	Non-food storage room	
Room 45(1)	Living room	Built as a living/habitation room and converted to non-food storage unit?
Room 102(2)	Non-food storage room	
Room 46	Granary	
Room 47(1)	Granary	

Table 7.15. Attributes of Open Areas in Courtyard Complexes J and M.

Courtyard Complex	Unit	Floor Area (m^2)	Floor Subfeatures	Wall Finish	Wall Subfeatures	Comments
J	Open Area 4(2)	5.78	Unknown	Plastered: full-wall mono-chrome, dado	none	
M	Open Area 5(2)	2.62	Hearth	Plastered: 2 full-wall monochromes (2)	Wall pegs	Potentially part of two courtyard complexes
	Open Area 6	3.60	Hearth	Plastered: full-wall Monochrome, aura	none	
	Open Area 32(2)	11.62	Unknown	None	none	Defined by rooftop of lower unit: no walls
	Room 43	4.99	Hearth	Plastered: full-wall monochrome, aura	none	Originally a larger open area

One of the findings of studying the open areas in these two complexes is that if the units have walls, they are always plastered on those sides that have maximum visibility to those standing outside of the open area. They show no evidence of having been painted, but plaster treatment may involve more than one coat, or the application of contrasting colors, especially a white or gray over a pink. This may be added as an aura around doorways that are accessed from the open area, or as wainscots or floor bands. This suggests that some social function such as the assertion of status was manifested in the architectural embellishments.

In addition, heating/cooking appliances appear in all open area units where floors were retained. In our view, it is unlikely that Open Area 4(2) had a hearth, but it is possible that Open Area 32(2) had at least one, based on the amount of sooting on the alcove ceiling above it. Wall pegs are rare (20%). Of unknown significance is the absence of mealing bins.

These open area units may be related to the need to permit lighting or ventilation to other areas, or to allow for continued traffic flow to some areas. We surmise that Open Area 32(2), if left open, would have allowed continued access and use of Open Area 14, still keeping it light enough to use. In crafting Open Area 4(2), ventilation ports in the west wall of Room 44(1) retained their original purpose, which would have been lost if the area had been enclosed. In addition, access into Room 100(2) could have been achieved from Open Areas M, N, or 16, a flexible arrangement for a unit collaboratively constructed.

Open Area 6 is unique in this complex, in that it seems to actually be a slightly elevated extension of Open Area M., a courtyard. The elevation of this unit helped somewhat in the entry to Rooms 41 and 42, but is probably at least in part related to the alcove morphology and the need to create a level terrace upon which to work. This unit has one corner hearth with a collar, but a second hearth is positioned immediately outside of the area where work could have been controlled from Open Area 6.

Kivas

For many years, kivas have been described using analogies from ethnographers as predominantly ceremonial spaces, however, it should be mentioned that in recent years, at least some archeologists (Lekson 1989) think that these units had residential functions more similar to living rooms. In part, this is an issue related to room function, since surface rooms "compete" as potential living rooms. Figure 3.1 of this report contains a flow diagram that indicates that kivas do not enter the analytical flow at the same time as residential rooms do, helping to define courtyard complexes. Lekson's argument about the potential uses of kivas as residences during the Pueblo III period is important, and if nothing else, deserves some attention at Mesa Verde sites, since architectural attributes that might offer information are well preserved. The evidence from Cliff Palace suggests that at least some of the Cliff Palace kivas were used as residences, based upon the following points:

There are about 150 rooms at Cliff Palace, and about 50 additional open areas besides courtyards. There are 22 kivas that probably were used or included in the final site layout.

Of these 150 rooms, only about 25 are living rooms, defined in our analysis as units having hearths or evidence of hearths that were once operational. This implies that the maximum number of households at Cliff Palace was approximately 25.

Twenty-two kivas probably are not needed in order to integrate 25 households.

By far, the majority of rectangular doorways at Cliff Palace seal from the exterior, a hallmark of a storage unit, even though we have demonstrated that some of those units were probably not used as storage units.

Additional residents of Cliff Palace could have lived in at least some of the kivas.

Room Suites and Households

Having identified what we think are suitable signature attributes for living rooms, storage rooms, granaries (Tables 7.11, 7.13, and 7.14) and open areas that we think were used by households, it remains to combine those units into suites that might have been used by single households. Each room suite must have at least one living room, although it may have additional rooms of any class, and may include open areas. Room suites are defined by considering several factors, including room function, and local construction history as reflected in wall segments. For the purposes of this study, all units comprising an individual room suite must be assignable to a single courtyard complex.

Courtyard Complex J

Courtyard Complex J consists of architectural spaces and structures in Cliff Palace built between A.D. 1260 and 1278. Of these units, two were originally built as living rooms, later three other units were converted into living areas. We have omitted from consideration

Rooms (1) and (2) since there are no data at all from them, but they undoubtedly had some impact on the residents of this complex.

By definition, a maximum of five households used this area, with a minimum of two. We have designated the different households by the courtyard complex designator, followed by a numeral, with Household J1 being the first one. Using the data on the construction history, we found four stages in the household development of Courtyard Complex J:

Stage 1: Household J1 (Sometime before A.D. 1271)

Room 36(1) and 126(2) were in place but not part of this courtyard complex. Rooms 25, 26, 27 were added probably with Kiva X probably between A.D. 1260 and 1270. The room and kiva functions and uses were:

Rooms 25 and 26: granaries (5.15 m^2);

Room 27: possibly a living room, possibly a granary (4.59 m^2)

Kiva X: possibly a living room, otherwise a socio-ceremonial locus.

Under this scenario, this household would have had between 5.15 and 9.74 m^2 of food storage, 0.00 m^2 of non-food storage, and at least 4.59 m^2 of living space if Room 27 had been used as living space and the lower value of the food storage space was used. We think that this represents no more than a single household, using an area of 9.74 m^2 of surface space, plus the space in the courtyard, and the floor space of Kiva X.

Stage 2: Household J2 develops (A.D. 1271-1273)

To the Stage 1 architecture were added Rooms 28(1) and 29(1), plus Kiva J, the latter as a replacement structure for Kiva X. This may represent either an additional household, bringing the total number to two, or expansion of the original household into a second living area. We think there were two households since it is unlikely that one household would occupy two living rooms. Under this scenario, spatial allocations would be:

Room 25 or 26: granary (either 2.92 or 2.23 m^2)

Room 25 or 26: living room (either 2.92 or 2.23 m^2)

Room 27: living room (4.59 m^2)

Rooms 28(1) and 29(1): non-food storage rooms (10.01 m^2)

Room 99(2): possibly added at this time; non-food storage room (5.23 m^2)

Kiva J: living room or socio-ceremonial locus (12.31 m^2)

If one adds the larger room (Room 25) to the living room area, these two hypothetical households would be residing in an area of 2.92 m^2 and 4.59 m^2, and sharing a granary of 2.23 m^2. Non-food storage made a large leap in spatial allocation to a maximum of 15.24 m^2.

Stage 3: Household J3 develops (after A.D. 1274)

After A.D. 1274, the south wing is built, with the first unit being added as Rooms 22(1), Room 23(1) and Room 98(2). There is no reason to think that any of the previous space was abandoned, and in fact, the new hearth in Room 25 or 26 suggests remodeling. These units also have at least some evidence of more than one floor. Spatial allocations in this unit are:

Room 22(1): non-food storage room (4.75m^2)

Room 23(1): living room (6.15 m^2)

Room 98(2): unknown function (7.17 m^2)

Kiva J continues in use, ostensibly shared now by three households. The total amount of space used by this household is 18.07 m^2, plus the space in Kiva J.

Stage 4: Household J4 develops (after A.D. 1274)

Still later, the development of the south wing in Courtyard Complex J results in an additional household that uses Room 21(1) as its living space. Only the second story unit is added as additional space:

Room 21(1): living room (2.88 m^2)

Room 97(2): unknown function (2.88 m^2)

Once again, there is no reason to suspect that any of the other room suites were abandoned, or that there was a population decline as households moved elsewhere. Kiva J would have continued in use.

Summary of Room Suite and Household Development in Courtyard Complex J

It seems at least likely that Courtyard Complex J developed from an earlier complex that contained a very small amount of residential space, perhaps resulting in

the use of Kiva X as a residential space. We cannot determine whether new non-food storage rooms added along with Household J2 were actually used by J1 or J2 residents, and the same is true of Open Area 4(2). We are assuming that the northern wing represents the addition of a second household to an earlier household. Further, we assume that J1 residency continued, with both households now sharing Kiva J.

The southern wing represents the addition of two additional households. Based on the tree-ring dating, neither of these households could have arrived before A.D. 1274. Since this time differential, when compared with Household J2 is only one or two years, internal population growth from within Courtyard Complex J is unlikely to be the mechanism invoked that led to the new residents. Kiva J continues in use, probably by three and ultimately four households. There is no evidence that suggests that Household J1 left, and in fact, the remodeling in this area suggests that residency in Rooms 25, 26, and /or 27 continued. Still, it should be mentioned that relocation of Households J1 and J2 to the south wing is a possibility, with adjustments in room function. Presumably, these changes might involve Rooms 25, 26, and 27, reverting to their original purpose of storage.

In any event, two factors seem clear within Courtyard Complex J. These include the small amount of surface room residential space for Households J1 and J2; perhaps supporting the allegation that buried Kiva X was used as living space. This same comment might extend to Kiva J, which has been excavated. However, there are no utilitarian sub-features along its walls and on its floor, such as those found in earlier pit structures, nor are utilitarian features common anywhere in Courtyard Complex J..

The second factor has to do with the introduction of non-food storage rooms. In Courtyard Complex J the storage rooms do not predate A.D. 1271 or the construction of Kiva J. More work is needed to explore this issue further, both in terms of the time frame for construction, and in terms of their association with kiva construction.

Courtyard Complex M

Courtyard Complex M consists of architectural spaces and structures in Cliff Palace built around A.D. 1268 and as late as A.D. 1272. There are three open areas and twelve enclosed rooms in addition to Open Area M and Kiva M. Miscellaneous structures help define these spaces. In the general history of the area, earlier architecture was extended toward the south. Architectural details and comparisons with other units, especially Kivas N and K, suggest to us that Kiva M was probably built in A.D. 1268 or 1269, along with other units comprising the complex.

This complex contains three living rooms, one of which may have been converted into a non-food storage unit. Since these living rooms are spatially separated, it is likely that they represent two households after the conversion of Room 45(1). Earlier, it is likely that only a single household was represented. This scenario can be described in stages.

Stage 1: Household M1 (sometime shortly before A.D. 1268)

Rooms 41, 42, and 45(1) were in place by A.D. 1268. It is possible that Kiva M, with its unusual form and lacking pilasters, was also in use prior to this date. In addition, the larger version of an open area that consists of Rooms 43 and 44(1) probably formed a walled but unroofed entry court area on the front of this area. The surface rooms can be described as:

Room 41: granary or non-food storage room (2.58 m^2)

Room 42: granary (3.80 m^2)

Room 45(1): living room (5.50 m^2)

Room 43/44(1): open work area (between 9.16 and 10 m^2)

Open Area 6: open work area (3.60 m^2)

The total space in use by this household probably was about 25.48 m^2, unless the residents also used Kiva M. Elsewhere, we have provided evidence that suggests that Kiva M was in place at that time, probably having been built in A.D. 1268 or 1269.

Stage 2: Household M1 expands and M2 develops (A.D. 1268 or 1269)

This stage represents the addition of a new household, or the expansion of the old one to accommodate population growth. In terms of construction history, the building activities include the subdivision of the open area into Rooms 43 and 44(1) and the addition of Room 46. We think that this was done by Household M1. The new arrangement of rooms would then have been:

Rooms 41 and 45: granary or non-food storage room (8.08 m^2)

Rooms 42 and 46: granaries (5.92 m2)

Room 44(1): living/habitation room (4.17 m^2)

Room 43: open work area (4.99 m^2)

Open Area 6: open work area (3.60 m^2)

The total area occupied by Household M1 would then have been 26.76 m^2, plus the floor area of Kiva M, about 8.00 m^2. This latter unit was probably shared with Household M2.

Household M2 consists of several units, generally added along the southern side of Kiva M at about the same time. These units include:

Room 39(1): living/habitation room (6.18 m2)

Room 40(1): non-food storage room (5.44 m^2)

Open Area 32(2): elevated work area or non-food storage area (11.62 m^2)

In addition, it is possible that both Open Area 6 and the granary space in Room 42 were shared by this group. Excluding these latter units, the total amount of floor area for Household M2 is 23.24 m^2.

Stage 3: Expansion of Households Using Courtyard Complex M

Although the north wing of this unit was added after A.D. 1272, it did not house a household that was associated with Kiva M. The interconnection of the living room in this unit is with Courtyard Complex N. We have interpreted this event as collaboration between adjacent courtyard complexes. Room 47(1) is a new unit added to Courtyard Complex M, but it is not possible to know which household used it. Arbitrarily, Open Area 5(2) has also been added to this expansion, although it could just as easily serve its function of an elevated work area for the residents of Courtyard Complex M. Room 47(1) has been assigned the function of a granary, based mostly on its small floor area of 2.62 m^2, among other factors. Based on proximity, the unit probably served the residents of Household M2, increasing its space to 25.86 m^2.

Stage 4: Construction of Rooms 101(2) and 102(2)

The non-food storage rooms, Rooms 101(2) and 102(2), were added after Stage 3. Based on the spatial association above the roofs of Rooms 44(1) and 45(1), these units probably were related to Household M1, representing another addition of 7.27 m^2. This brought the amount of space under control of Household M1 to 34.03 m^2.

Summary of Room Suite and Household Development in Courtyard Complex M

The history of Courtyard Complex M is one of steady growth. Remodeling in this area allowed household spaces to be adjusted, and functional spaces to be altered. This courtyard complex probably never included more than two households, with the first one in place prior to A.D. 1268. In A.D. 1268 or 1269, the second household arrived, and Kiva M was probably built. This was part of a broader flurry of construction that included Kiva N.

Courtyard Complexes

The courtyard complex includes enclosed spaces and open areas, but also adds a kiva, generally interpreted as a construct that integrates residents beyond those of a single household. In addition, the Courtyard Complex normally includes a central courtyard that was shared in ways that the kiva might have been shared, albeit in a less private setting. Following the hierarchical approach of Figure 3.1, the interior spaces of the courtyard complex have been evaluated in terms of their construction sequences and potential function. Using information from both evaluations, they were then grouped in suites.

In the case of Courtyard Complex J, we identified as many as four households that probably arrived or developed over a period of at least five or six years, but potentially over a longer period. There is evidence for at least two households, and if so, they relocated later in the history of the development of the complex. What is generally missing in terms of this development is the first date. Additions occurred about A.D. 1271 and after A.D. 1274.

For Courtyard Complex M, there is only direct evidence of two households. Again, the first date for this construction is missing, but this courtyard complex was essentially in place by A.D. 1268 or 1269, with room additions and small-scale modifications continuing up through A.D. 1272 or 1273.

The core of the courtyard complex is the courtyard or plaza, one of the sub-types of open areas. These spaces are thinkd to be larger, to have served as gathering spaces, and to have social importance. Further, it was suggested that these spaces might be embellished as a measure of their social importance, and probably would have fewer utilitarian sub-features than spaces that were geared toward food processing or other technical pursuits. Each of the two courtyards fits into and helps to refine this expectation.

Open Area J is both large and level. Floor characteristics have been somewhat compromised by the construction of a modern preservation floor that is designed to bear the traffic of visitors. Any floor sub-features that may have once remained on this surface are now missing. The walls of the units that surround Open Area J show evidence of plastering and painting. Plaster treatments on the eastern and southern facades have multicolor treatments, and there are the rudiments of reddish paint, although almost all of it is now gone. Doorways along the eastern facade have auras in white to gray colors around them. The northern facade lacks this treatment, as does the exterior of Room 124(2), along the southern facade. The latter contains a series of regularly spaced wall pegs that must have served some purpose of suspension. This seems related to utilitarian purpose.

Open Area M was repeatedly plastered. The northern facade contains a white to gray undercoat, with several red designs now faded but still visible. At least one stone from this wall has been recycled by Fewkes' masons into the upper kiva wall, bearing its red decoration in an inappropriate place. The southern wall was also painted in a similar color, and later this was covered in pink plaster and painted. Above the doorway to Room 40(1), there is a series of red handprints. The eastern facade of this unit is also plastered, but has been identified as part of Open Area 6. Adjacent to the step upward into Open Area 6 is a hearth with a collar, the sole utilitarian feature in Open Area M.

Regarding the kivas in these two courtyard complexes, we have already raised the issue about whether they were in fact living spaces. It should be noted that these structures contain no obviously utilitarian floor sub-features beyond the hearth. Kiva J contains a sipapu, but Kiva M does not. The two examples that were part of this study contained niches found in the same locations as other excavated kivas at Mesa Verde. Placement of a specified set of floor sub-features into kivas in selected locations stands in stark contrast to the random number, kinds, and placement of floor holes that bedot Basketmaker III and Pueblo I pithouse floors.

Like many kivas in Cliff Palace, Kivas J and M were heavily plastered, with sooting on the layers. It is likely that they were plastered because soot was deposited on the walls from frequent fires, requiring a coating of plaster to cover it. Some ethnographic documentation suggests that this was done annually. We have seen kivas with between ten and twenty coats in other areas. These two kivas each have less than five, suggesting shorter use period if the annual replastering can be used as any estimate of such duration. Painting the plaster was also done in each case, generally in geometric designs. These paintings have faded, but Lancaster, Copeland and Ives, and Silver all noted that Kiva J contained white handprints on one of the pilasters. Silver also noted that a thin wash was applied during the modern era, possibly in an attempt to cover some of the discoloration from sooting. Kiva M retained evidence of painting in the form of red triangles and at least one white handprint. In summary, the attention to detail with respect to embellishment, the kind of sub-features and their placement, coupled with the absence of utilitarian features other than wall pegs, all argue against these units having served merely as living spaces.

On the other hand, Cliff Palace is a very cold place in the winter. The few fireplaces remaining in the surface rooms and the heavy sooting in kivas support Lekson's contention that kivas may have been used as winter living rooms. Jack Smith conducted an experiment in which a fire was created inside a reconstructed kiva at Spruce Tree House. His preliminary data on air temperatures inside it show that with a fire, kivas become warm rapidly and stay that way even after the fire was extinguished. Kivas would be a very efficient place of refuge in cold weather, especially if fuel was limited.

To summarize population estimates within each of these two courtyard complexes, we think that only two households were resident in Courtyard Complex M, amounting to between six and eight persons. Courtyard Complex J has a more equivocal number of households, ranging between two and four. This probably indicates a population ranging between six and sixteen. We think that a reasonable estimate is ten to twelve individuals.

The relationships between the users of kivas and presumably the courtyard complexes above them have several dimensions, which have been identified in some of the classic ethnographic literature of the Southwest (Eggan 1950; Fox 1967). Most often, a clan relationship invoked in archeological situations, based on the idea that during the prehistoric period people tended to live near their relatives. During the modern era, this tendency has deteriorated somewhat. We think that clan kivas probably existed at Cliff Palace, implying that the households that lived in each complex were related.

A second social dimension that is less frequently portrayed as relevant for prehistoric situations is the use of kivas by societies, groups of individuals, usually males who create relationships that often cut across kinship ties. In these groups, men are not necessarily related to one another. We have not yet determined the ways that these two social dimensions might be separated one from another using architectural evidence, but think that it is probably related to the spatial association of kivas with surrounding residential spaces. Society members do not need to reside nearby their kivas, since they live with their relatives.

Dual or Three-Part Social Divisions

The original model presented an element that was termed "dual (two-part) or triadic (three-part)" divisions. These are more expansive groupings of architecture that represent larger groups than those using a single kiva. Ethnographically, cases of duality exist in terms of social organization, among the eastern and western Keresan and Tanoan language families, the Hopi, and the Zuni. All of these groups are among those that have affiliation relationships with the Mesa Verde area. In addition, a number of archeological sites at Mesa Verde show some dual division architecturally. This has been interpreted as evidence that such dualities existed in the past, but no one had mentioned whether duality was present at Cliff Palace. At first glance, there appears to be none in the ground plan developed by Fewkes. During the work that was done throughout the site, we identified strong evidence to support architectural dual divisions at Cliff Palace. These dual divisions, called moieties, probably reflect social organizations of the same kind that were noted in modern pueblos.

Architecturally and archeologically, each dual division should be recognizable based on reasonably unrestricted accessibility within that division, and a restricted accessibility between the two dual divisions. In some cases, dual divisions could be determined based on some type of symmetry with respect to village layout, in terms of unique architectural details, or in terms of localization of architectural details. In this latter case, one might expect to find construction practices or design to be more alike within each division than between divisions. This represents a level of analysis that has not yet been executed at Cliff Palace, or other places, as far as we know. We found at least one example of each of the other three signatures.

Accessibility

As we worked, we examined how the original residents would have accessed the various rooms and open areas. We sought a series of walls that were not penetrated by doorways, such that relatively exclusive parts of the site would be created for each of two units, each substantially larger than a courtyard complex. In summary, we found such a line, in association with several unusual archeological constructs. It is shown in Figure 1.1 as "Moiety Boundary".

This line demarcating the two parts of the site that we think is associated with dualities begins at the rear of the site, against the exterior southwest corner of Room 63, a low room with an alcove roof. The interpretive trail used to go through this area, above an old collapse of the north and east walls of Room 64, obscuring this relationship. Close examination of the plastering scars on the walls of Room 63 demonstrates that access to Room 63 was blocked from the south, and that access to Room 62 was blocked for anyone moving toward the south. This occurred once Rooms 64 and 59 were built.

Rooms 64 and 59 were built as a very large rectangle that was divided into two smaller rooms by a partition wall, a common Ancestral Puebloan building practice. In the case of Rooms 59 and 64, the resultant rooms were quite large (9.54 m^2 and 8.38 m^2, respectively). These units are the two largest surface rooms in the lower part of Cliff Palace, with walls composed of compound masonry, only used in the latest structures at Cliff Palace. In the west wall of each unit is a very large doorway with a highly elevated sill. Once again, these doorways are unique to these two rooms. Floors are featureless, except for earlier grinding slicks on bedrock exposures, and oxidation plumes that we think are related to Euro-American visits. We think that these two rooms represent duality, coupled with another construct.

These second constructs are units designated as Kivas O and R by Fewkes, but recognized by him as something not quite like the other kivas he saw. Nordenskiold also spent some time on Kiva R, preparing drawings of the unit because it seemed anomalous to him. Although these units might be kivas that were used by the members of each dual division, such as a moiety, we think that they are some other kind of building that was used by these same social groups. It is tempting to assume that these units, each of which is surrounded by a large wall and has a wide banquette, are merely unfinished kivas. They have no pilasters, and do not appear to have any hearths. They may have had ventilation systems, which suggests that a roof was intended. More comparative work is need on these structures.

Regarding the locations of these units, Kiva R is positioned immediately outside of the doorway of Room 64. If no roof had been planned for this unit, a ladder would have been needed to enter it. Kiva O is at some distance from Room 59, but we think that its location is related to the earlier construction of Courtyard Complex P, which was built in A.D. 1273 and 1274. Since all remaining spaces were also filled with buildings, the closest available space was the current location of Kiva O.

Returning to the line demarcating the two dual divisions, it extends across the top of Miscellaneous Structure 14, another massive wall of compound construction, to the rear of the room block comprising Courtyard Complex P. The doorway patterns of Room 57(1) do not permit movement to the south, and there is no room below it. The doorway placed below Room 57(1) was installed by stabilization crews, and never

existed in ancient times, since there is only fill beneath it. Room 57(1) opens above Kiva Q, a key structure in this interpretation. The demarcation line then runs along the north and eastern side of Room 58(1), assigning Courtyard Complex P to the southeastern dual division.

Related to this discussion is the relative late construction date of Kivas O and R. New tree-ring information indicates that they were built between A.D. 1278 and 1280, very late in the Mesa Verde sequence of dates. The development of these dual divisions thus can be placed in time near the end of the thirteenth century, nearly a terminal date.

Symmetry of the Ledge Rooms

We suggest that symmetry or mirror imaging in structure placement is another measure of duality. Although our recognition that there was evidence for dual social and architectural division in the lower part of Cliff Palace preceded our climb to the ledge rooms, once we arrived on the ledge we were struck by the degree of symmetry afforded by large units at either end of it. The two large rooms at the southern end and the single large room at the northern end provide the impression of mirror imaging. A more detailed set of information about these rooms is contained in Chapter 6. In addition, the exterior white paint around apertures located in rooms at the either end of the ledge is evidence of this same phenomenon.

At this point, we do not know why there are three such large rooms rather that two, although it could be related to numbers of rooms in the lower part of the site. The southeastern dual division is much larger than the northern one, perhaps reflecting a larger population that somehow shared in architectural divisions atop the ledge. More comparisons with units below the ledge are needed to explore this situation further.

There are some additional cases of rough symmetry in the lower site, but in each case, the abutment patterns and tree-ring dates require more detailed study. Among these are the potential correlation of Kiva W and the units in that building, located out on the point on one end of the site and seemingly a massive building of major construction investment. At the southern end of the site, a potential similar structure is the group of three kivas all linked by tunnels, with massive, two to three story construction.

Unique Details

There is additional work to do in the area of unique details for the site as a whole. At this point, a few tantalizing details were discovered that pertain to duality. The most interesting of these is the plaster coloration in Kiva Q. The plaster on the wall is of two colors, with the northern half of the banquette face differing from the southern half. The demarcation point between these two colors runs midway through a niche in the eastern wall. As unusual as this seems, we think that the position of Kiva Q is as important. It is below the Speaker Chief Complex, near the interface between the demarcation line that divides Cliff Palace into two parts. We think that this unit is associated with the Speaker Chief Complex and has substantial importance within the village of Cliff Palace, and that this kiva truly represents the point at which the dual divisions come together, integrating two major subdivisions.

A Note on Triadic (Three-Part) Divisions

In the original model (Figure 3.1), dual and triadic (three-part) divisions were compressed into a single ellipse since they were viewed at the same analytical level. In other words, we thought that a site either might have dual divisions or triadic divisions, but probably not both. The dual division concept was one born from the marriage of ethnographic study and archeological findings that had been widely hypothesized in scholarly literature. The idea that triadic divisions might be found archeologically had not been expressed until Nordby's work at Sliding Rock Ruin in Canyon de Chelly, Arizona. In that case, three architectural units were suggested, rather than two. In addition, while working at Mummy Cave in Canyon del Muerto, Nordby found that the central part of the site, seemingly public architecture, has three kivas, and the tower has three floors. The residential portions of the site were also twice as large on one side as on the other, suggesting three units.

The previous sections of this report evaluate dual or triadic divisions and at least raised the issue as to whether societies existed at Cliff Palace. In this context, all residents of the village would be members of one moiety or another, and potentially of a society. This situation contrasts with one in which several clan kivas (i.e. having associated residential space) might be spatially grouped. We allege that the social scales of these units might be different than a moiety or society, even though the original model given in Figure 3.1 lumped them together.

Phratries and Sib Clans

At Cliff Palace, we noted that the village layout sometimes involved three kivas in proximity to one another, approximately on the same level, or actually physically linked. Later, when the tree-ring dates were returned, some of these units had cutting dates from the same year. We interpret this latter event as a demonstration that kiva groups, potentially related clans, were involved in construction at Cliff Palace during the

same year. Unfortunately, the best correlation from tree-rings involved only two units, although some aspects of layout or architectural details might still argue in favor of some kind of connection. This conforms to special relationships between clans known from ethnographic literature, such as the sib clans of a phratry. We are using this term as a group of several totemic (tracing ancestry to a totem) clans that cannot marry within the group (exogamous). These sib clans might involve a smaller social group than a moiety. Table 7.16 lists some examples.

The Village of Cliff Palace

Evaluating the village of Cliff Palace as a single entity comprised of dual divisions entails identifying those kinds of structures that are singular or unique. There are several candidates for constructs that are unique and could help create a village identity, perceived either in the minds of the residents themselves, or in the minds of the beholders from elsewhere. The most salient example includes the building now known as the Speaker Chief Complex, but there are at least two others. These are the circular tower (Rooms 36(1) and 126(2)), and what is euphemistically known as the "square tower", consisting of Rooms 11(1), 120(2), 121(3) and 124(4). Although the square tower now appears as an isolated four story building, it originally had two enclosed stories and a third story open area built against the northern face. What makes this building unique is not its height, but the interior paintings and plaster.

The Speaker Chief Complex consists of up to three stories with two ground floor rooms. The enclosing walls define broad open areas, and there are additional rooms as well, one of which was used for mealing. It is situated in a very compelling position. Along one end is Room 68(1), the unit from which one moves to the Ledge Complex. We think that the Speaker Chief Complex is important since it may have controlled access to the large rooms symmetrically arranged on the ledge. Although this building produced no dates besides those associated with the modern era, we think it is somewhat earlier than much of the remaining architecture within the site, almost certainly earlier than the dual division building episodes of A.D. 1278 to 1280. There is a cutting date of A.D. 1264 from Room 80. This room is a later addition built against the outside of the Complex, so it is fairly certain that the complex was in place by that A.D. 1264.

The Mesa Verde Community Surrounding Cliff Palace

The role of Cliff Palace within the community of nearby sites must have been significant. By any measure, Cliff Palace is a large site, even though our architectural research indicates that there were only about 150 rooms. We think the importance of Cliff Palace lies not in room counts, but in the special role that it played within the greater Ancestral Puebloan community of thirteenth century alcove sites.

The relationships between households and the numbers of kivas and grinding areas, the exterior sealing conventions of doorways, and the uniqueness of some of the architecture are some of the reasons why we think that Cliff Palace had a central role in the local community. To summarize key elements in our interpretation:

Cliff Palace does not show evidence of numerous households, only about 25.

Cliff Palace probably had a population of about 100 to 150 persons, unless at least some of the kivas were residences.

If the kivas were not residences, 22 in use at any one

Table 7.16. Potential Kiva Groupings that Might Represent Phratries at Cliff Palace.

Kivas in Grouping	Evidence Suggesting a Link
Kivas A, B, and D	Physical connection by tunnels
Kivas G, H, and I	Details suggest that all three are very late additions, units are on the same level within the site.
Kivas E, J, and K	Kivas J and K probably built during same year; Open Area E and Kiva E linked by entry to Open Area J.
Kivas L, M, and N	Kivas M and N probably built in the same year; proximity of all three units; potentially shared residential space.

time seems to be too many of them to integrate a population of only 100-150 persons.

Cliff Palace contains large numbers of doorways that seal from the exterior, many of which are non-food storage rooms.

Cliff Palace probably has too few permanent grinding facilities for grinding corn to feed a population much more than 100 people.

Cliff Palace contains numerous examples of public architecture that were built between A.D. 1278 and 1280, but probably not by the resident population alone.

Taken together, the foregoing suggests to us that the social importance of Cliff Palace is in social gatherings that occurred periodically, and included a larger population than those who lived there permanently. We think that a resident population of about 25 households served as caretakers or managers of Cliff Palace throughout most of the year, and that seasonal gatherings involved two or three times as many persons. When these people came to Cliff Palace, we think it likely that they used the kivas as short-term residential spaces. The people also may have used the non-food storage rooms for short-term residence.

The special gatherings at Cliff Palace may have been similar to the periodic ceremonies of modern Puebloan groups. Other potential purposes of the special gatherings could include food redistribution of surpluses during hard times, establishing or reaffirming marriage ties, trading, or craft production that may have been localized within kiva groups. We think that the interacting group came from habitations in the immediate area, probably the other alcove sites such as those in Fewkes Canyon, Sunset House, or similar villages of five to ten households. We hope these interpretations can be evaluated by comparative architectural study of sites near Cliff Palace and extended to other portions of the site.

Model Reformulation

Work at this portion of Cliff Palace utilized the original model given in Figure 3.1 with suitable results, but some of our findings identified some of the deficiencies. We found new kinds of spaces or structures, and/or spaces were not connected with the model in ways that had previously been experienced. Consequently, we have crafted a new version of Figure 3.1, included in this chapter as Figure 7.1. The major differences can be highlighted, as follows:

the concept of linked courtyard complexes was separated from dual or triadic divisions, and each is thought to represent a different level of social complexity

certain surface room classes were often “attached” to courtyard complexes or more complex architectural and social groupings than room suites/households

a few kivas are not positioned adjacent to room suites or households, and consequently probably served in a different capacity than merely to integrate households; they represent some larger social entity than clan groups

the role of open areas at the household level is now better understood and can be better examined

adding roofs or floors as elements of the model simply represents increased attention to architectural elements not dealt with as systematically in the past.

We are continuing to use this framework to further examine Cliff Palace and other examples of alcove architecture at Mesa Verde.

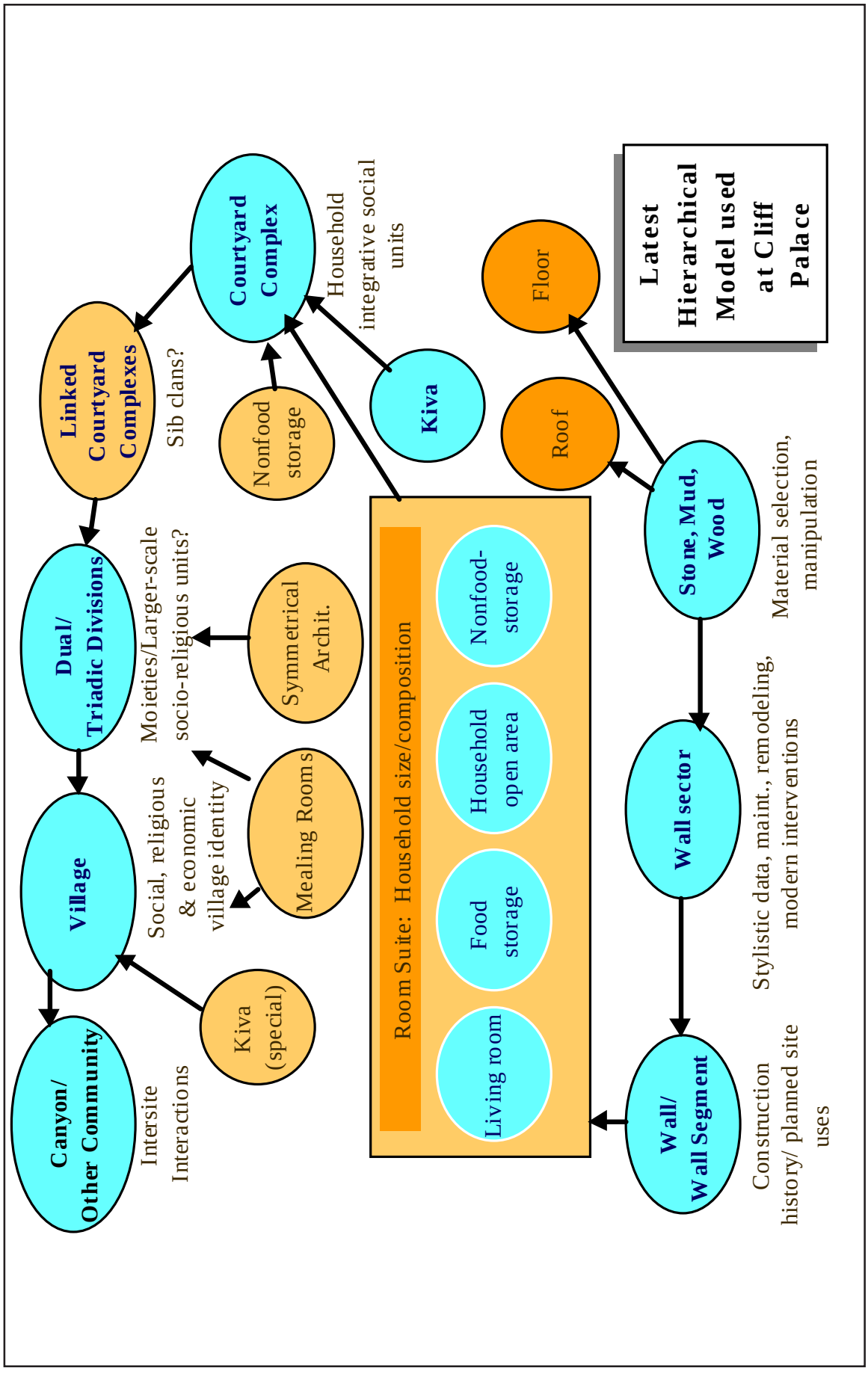

Figure 7.1. Latest Heirarchical Social Interaction Model used at Cliff Palace.

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Appendix A:

Provenience Correlation Chart for Cliff Palace

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Room 1 (1)	Room 1, in part	Room 100	Room 1	Room 1	Fewkes' map is incorrect; probably an open area rather than a room
Room 2 (1)	Room 2	Room 99	Room 2	Room 2	no rooms above
Room 3 (1)	Room 3	Room 98	Room 3	Room 3	room below boulder that forms part of Rm 1's floor
Room 4 (1)	Room 4	Room 101	Room 4	Room 4	room built on a foundation boulder; Room 113 (1) below; Room 114 (2) above
Room 5 (1)	Room 5	Room 97	Room 5	Room 5	O A BBB (2) above; Nordenskiold map is incorrect
Room 6 (1)	Room 6	Room 94	Room 6	Room 6	accessway into Courtyard Complex D from OA C
Room 7 (1)	Room 7	Room 102	Room 7	Room 7	Fewkes' map incorrect; part of Rm 7 is west of Rm 4
Room 8 (1)	Room 8	Room 96	Room 8	Room 8	Room 116 (2) above
Room 9 (1)	Room 9	Room 95	Room 9	Room 9	Room 118 (2) above
Misc. Structure 10	Room 10	No number	Room 10	Room 10	actually not a room, but a bench/buttress west of Room 11 (1); Rm 10 not used in this study.
Room 11 (1)	Room 11	Room 91	Room 11	Room 11	Rms 120 (2), 121 (3), and 122 (4) above; added on to west side of Rm 12, a core room
Room 12 (1)	Room 12	Room 92	not mapped	Room 12	Nordenskiold's map inaccurate
Room 13 (1)	Room 13	Room 90	Room 13	Room 13	OA FF (2) above
Room 14 (1)	Room 14	Room 89	Room 14	Room 14	Rm 119 (2), OA EE (3) above
Room 15 (1)	Room 15	Room 87	Room 15	Room 15	OA CC (2) above supplied access to Ctyd Cmplx E
Room 16 (1)	Room 16	No number	Room 16	Room 16	OA DD (2) above is shared with Rm 24 (1) rooftop
Room 17 (1)	Room 17	Room 86	Room 17	Room 17	Room 123 (2) above
Room 18 (1)	Room 18	Room 85	Room 18	Room 18	Room 124 (2) above

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Room 19 (1)	Room 19	Room 84	Room 19	Room 19	OA GG (2) above
Room 20 (1)	Room 20	Room 83	Room 20	Room 20	entered by roof hatch from Rm 125 (2)
Room 21 (1)	Room 21	Room 82	Room 21	Room 21	Room 97 (2) above; probably built as a single two-storey unit
Room 22 (1)	Room 22	Room 81	Room 22	Room 22	Room 98 (2) above, shared with Rm 23 (1) roof area
Room 23 (1)	Room 23	Room 80	Room 23	Room 23	Room 98 (2) partially above; Fewkes' map is inaccurate at east side
Room 24 (1)	Room 24	Room 69	Room 24	Room 24	OA DD (2) above, shared with Rm 16 (1) rooftop
Room 25 (1)	Room 25	Room 79	Room 25	Room 25	no rooms above
Room 26 (1)	Room 26	Room 78	Room 26	Room 26	no rooms above
Room 27 (1)	Room 27	Room 77	Room 27	Room 27	no rooms above
Room 28 (1)	Room 28	Room 73	Room 28	Room 28	Room 99 (2) above
Room 29 (1)	Room 29	Room 74	Room 29	Room 29	OA X (2) above
Room 30 (1)	Room 30	Room 71	Room 30	Room 30	unknown space above
Room 31 (1)	Room 31	Room 69	Room 31	Room 31	unknown space above
Room 32 (1)	Room 32	Room 68	Room 32	Room 32	unknown space above
Room 33 (1)	Room 33	No number	Room 33	Room 33	unknown space above
Room 34 (1)	Room 34	Room 66	Room 34	Room 34	unknown space above

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Kiva H, Alcove 1	Room 35	No number	Room 35	Room 35	Room 35, as defined in the past, is only an alcove within Kiva H; Rm 35 not used in this study
Room 36 (1)	Room 36	Room 63	Room 36	Room 36	known as the “round tower,” Rm 126 (2) above
Room 37 (1)	Room 37	Room 61	Room 37	Room 37	Room 127 (2) above
Room 38 (1)	Room 38	Room 60	Room 38	Room 38	Room 129 (2) above
Room 39 (1)	Room 39	Room 59	Room 39	Room 39	coded as a two-storey room by Fewkes, but not enclosed; area above is OA ZZ (2); shared with Rm 40 (1) rooftop
Room 40 (1)	Room 40	Room 58	Room 40	Room 40	coded as a two-storey room by Fewkes, but not enclosed; area above is OA ZZ (2); shared with Rm 39 (1) rooftop
Room 41 (1)	Room 41	Room 41	Room 41	Room 41	the only room in site that was always designated with the same number!!!
Room 42 (1)	Room 42	Room 40	Room 42	Room 42	no rooms above
Room 43 (1)	Room 43	Room 39	Room 43	Room 43	no rooms above
Room 44 (1)	Room 44	Room 35	Room 44	Room 44	Room 101 (2) above
Room 45 (1)	Room 45	Room 34	Room 45	Room 45	Room 102 (2) above
Room 46 (1)	Room 46	Room 38	Room 46	Room 46	no rooms above
Room 47 (1)	Room 47	Room 36	Room 47	Room 47	OA Y (2) above
Room 48 (1)	Room 48	Room 37	Room 48	Room 48	Room 100 (2) above
Room 49 (1)	Room 49	Room 33	Room 49	Room 49	Room 103 (2) above

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Room 50 (1)	Room 50	Room 32	Room 50	Room 50	Room 131 (2) above
Room 51 (1)	Room 51	Room 31	Room 51	Room 51	Room 132 (2) above
Room 52 (1)	Room 52	Room 30	Room 52	Room 52	no rooms above
Room 53 (1)	Room 53	Room 50	Room 53	Room 53	Room 130 (2) above
Room 54 (1)	Room 54	Room 49	Room 54	Room 54	OA YY (2) above
Room 55 (1)	Room 55	Room 48	Room 55	Room 55	Room 137 (2) above
Room 56 (1)	Room 56	Room 46	Room 56	Room 56	Room 136 (2) above
Room 57 (1)	Room 57	Room 45	Room 57	Room 57	Room 139 (2) above
Room 58 (1)	Room 58	Room 47	Room 58	Room 58	Room 138 (2) above
Room 59 (1)	Room 59	Room 43	Room 59	Room 59	no rooms above, directly below attempt to construct tunnel from ledge complex to area below
Room 60 (1)	Room 60	Room 29	Room 60	Room 60	Rm 60 (1) assigned to northern portion of Fewkes' Room 60, which is actually two rooms; Room 148 (1) assigned to southern part in this study. No rooms above.
Room 61 (1)	Room 61	Room 28	Room 61	Room 61	no rooms above
Room 62 (1)	Room 62	Room 27	Room 62	Room 62	no rooms above
Room 63 (1)	Room 63	Room 26	Room 63	Room 63	no rooms above

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Room 64 (1)	none shown on published map, but probably intended as Room 64	Room 42	Room 64	Room 64	no rooms above
Room 65 (1)	Room 65	No number	Room 65	Room 65	Room 140 (2) above
Room 66 (1)	Room 66	No number	Room 66	Room 66	cylindrical room of onely one storey
passageway that is actually part of OA 3	Room 67	Room 25	Room 67	Room 67	not a room, but a passageway; Room 67 not used as part of this study
Room 68 (1)	Room 68	Room 21a	Room 68	Room 68	open area atop room was the sole access to the Ledge Complex, probably via ladder
passageway that is actually OA 36	Room 69	Room 24	Room 69	Room 69	not a room but a passageway; Room 69 not used as part of this study
Room 70 (1)	Room 70	Room 20	Room 70	Room 70	possibly not roofed, contains mealing bins; part of Speaker Chief Complex (SCC)
Room 71 (1)	Room 71	Room 18	Room 71	Room 71	no enclosed rooms above, though possibly an open area; SCC
Room 72 (1)	Room 72	Room 16	Room 72	Room 72	Rooms 133 (2), 115 (3) above; SCC
Room 73 (1)	Room 73	Room 17	Room 73	Room 73	no enclosed rooms above, possibly an open area; SCC
Room 74 (1)	Room 74	Room 15	Room 74	Room 74	Rooms 134 (2), 135 (3) above; SCC
Room 75 (1)	Room 75	Room 22	Room 75	Room 75	no rooms above

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Slab Struct. 1	Room 76	Room 105	Room 76	Room 76	BM III-P I unit that is probably not a room, but a storage cist. Room 76 not used in this study.
Slab Struct. 2	Room 77	Room 104	Room 77	Room 77	BM III-P I unit that is probably not a room, but a storage cist. Room 77 not used in this study.
Slab Struct. 3	Room 78	Room 103	Room 78	Room 78	BM III-P I unit that is probably not a room, but a storage cist. Room 78 not used in this study.
Room 79 (1)	Room 79	Room 13	Room 79	Room 79	Room 147 (2) above
Room 80 (1)	Room 80	Room 14	Room 80	Room 80	no enclosed rooms above, possibly an open area.
Room 81 (1)	Room 81	Room 8	Room 81	Room 81	Room 141 (2) above
Room 82 (1)	Room 82	no number	Room 82	Room 82	Room 144 (2) above
Room 83 (1)	Room 83	no number	Room 83	Room 83	no rooms above
Open Area 35	Room 84	no number	Room 84	Room 84	not an enclosed room, but an open area; Room 84 not used in this study.
Room 85 (1)	Room 85	Room 6	Room 85	Room 85	no rooms above
Room 86 (1)	Room 86	Room 5	Room 86	Room 86	Room 142 (2) above
Room 87 (1)	Room 87	Room 3	Room 87	Room 87	Room 143 (2) above
Room 88 (1)	Room 88	Room 2	Room 88	Room 88	no rooms above; possibly an open area
Room 89 (1)	Room 89	no number	Room 89	Room 89	no rooms above; possibly an open area
Room 90 (1)	Room 90	no number	Room 90	Room 90	no rooms above; possibly an open area

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Room 91 (1)	Room 91	no number	Room 91	Room 91	no rooms above; possibly an open area
Room 92 (2)	Room 92	no number	Room 92	Room 92	probably not an enclosed room but an open mealing area, though not enough evidence to support a change without additional records research
Room 93 (1)	Room 93	no number	Room 93	Room 93	no rooms above
Room 94 (1)	Room 94	no number	Room 94	Room 94	no rooms above
Room 95 (1)	Room 95	no number	Room 95	Room 95	no rooms above; room is now absent
Room 96 (1)	no number	no number	Room 96	Room 96	not shown on Fewkes' map, apparently added to map and numbered by Morse; no rooms above, room is now absent
Room 97 (2)	no number	no number	no number	no number	Room 21 (1) below
Room 98 (2)	no number	no number	no number	no number	Rooms 22 (1) and 23 (1) below
Room 99 (2)	no number	no number	no number	no number	Room 28 (1) below
Room 100 (2)	no number	no number	no number	no number	Room 48 (1) below
Room 101 (2)	no number	no number	no number	no number	low, attic-like room; Room 44 (1) below
Room 102 (2)	no number	no number	no number	no number	low, attic-like room; Room 45 (1) below
Room 103 (2)	no number	no number	no number	no number	low, attic-like room; Room 49 (1) below
Room 104 (1)	no number	no number	no number	Room 1	no rooms above; ledge complex (LCX)
Room 105 (1)	no number	no number	no number	Room 2	no rooms above; ledge complex (LCX)

Nordby/Brisbin (1997)	Fewkes (1911)	Nordenskiold (1893)	Morse Map (1936)	Copeland & Ives (1973)	Comments
Room 140 (2)	no number	no number	no number	no number	Room 65 (1) below
Room 141 (2)	no number	no number	no number	no number	Room 81 (1) below
Room 142 (2)	no number	no number	no number	no number	Room 86 (1) below
Room 143 (2)	no number	no number	no number	no number	Room 87 (1) below
Room 144 (2)	no number	no number	no number	no number	Room 82 (1) below
Room 145 (2)	no number	no number	no number	no number	Kiva W below; OA W (2) above
Room 146 (1)	no number	no number	no number	no number	low room built below foundation boulder for SCC and Room 80 (1)
Room 147 (2)	no number	no number	no number	no number	Room 79 (1) below
Room 148 (1)	no number	no number	no number	no number	number assigned to the southern half of Room 60 (1); no rooms above
Room 149 (1)	no number	no number	no number	no number	no enclosed rooms above, possibly a rooftop open area above

Appendix B:

Explanation of Computer Codes and Abbreviations used within the Maps and Tables

Wall Features: Niches

This catagory of architectural space includes niches and other wall features that are of the same general form, such as wall vaults, wall cists, and toe-holds.

Niche : NC — This is a small cubby hole built into a wall. They are usually about the size of a building stone, and are sometimes lined with plaster and/or carefully shaped liner stones. They are most often rectangular, but may be other shapes as well.

Wall Vault: VA — Generally a wall vault is a quadrilateral or rectilinear feature of formal shape that is built into a wall. The corners of a vault are angular and in later periods vaults were constructed entirely of masonry. Generally a vault is much larger than a niche, but there is no set dimension that distinguishes them. Where a niche was used to hold small items, a vault was designed to hold larger items, such as ollas.

Cist: CS — A cist is generally a floor feature, but rarely a wall feature may be characterized as a cist. It is a non-angular cubby hole, and is characterized by its basin or bell-shaped bottom.

Toe Hold: TH — A toe hold is a small niche-like feature that is often pecked into the wall face, or bedrock. It was used to gain access to something overhead, such as a hatchway or a rooftop.

Wall Features: Entryways, Vents and Loop Holes

This catagory of architectural space descripes wall features that form apertures in a wall, such as wall entryways, vents and loop holes. Unlike other wall features, each of these feature types is numbered sequentially across the site because it relates to more than one architectural space.

Wall Entryway: WE — This is an opening in a wall which allows access into or out of a structure. Many wall entryways are rectangular with a slight tapering in width near the top. Other wall entryways are T-shaped, but they are not restricted to these shapes.

Vent: VN — A vent is an opening through a wall which enhances air flow through a room.

Loop Hole: LH — This is another opening through a wall, very much like a vent, but usually smaller. These features are designed for visibility, lighting, and/or purposes other than access or ventilation.

Tunnels and Ventilator Complexes

This catagory of architectural space is related to tunnels and ventilator complexes. Like the wall aperture features above, these features connect two or more spaces, and are therefor numbered sequentially across the site.

Tunnel: TN
This is an enclosed passageway that connects two or more spaces, or allows passage to another architectural space. A tunnel is usually underground, but may also be a constructed enclosed passageway. Tunnels may be horizontal, vertical, or both.

Ventilator Complex: VT
A ventilator complex is a tunnel or series of tunnel like openings that connect a vent with an exterior space. Generally if has two components, a tunnel and a shaft.

- A ventilator tunnel is the horizontal aspect of the ventilation system (usually in a kiva). The ventilator tunnel usually connects the ventilator portal to the ventilator shaft.
- The ventilator shaft is the vertical aspect of the ventilation system (usually in a kiva). The Ventilator Shaft connects the ventilator tunnel to the outside, where fresh air can be obtained for ventilation.

Miscellaneous Wall Sub-features

This catagory of architectural space includes all of the small organic sub-features and castings and all constructed sub-features within an architectural space.

Loop: LP
This is a piece fibrous material (small twig, twisted cord, etc.) that is embedded in the wall at both ends, thus forming a loop. This feature type may be assigned to a loop that is no longer complete. For example, two similar pieces of fiber or wood extruding from the wall within close proximity to each other may be featured together as one loop if it appears that they used to be a single piece.

Peg Hole: PH
This is a small, usually round or oval, hole in a wall that used to contain a Wall Peg.

Wall Peg: WP
This is a small piece of wood that extrudes from the wall surface. Wall peg should not be used to identify wood that is included in the roof structure.

Small Constructed Features are:

Shelf: SH
This is generally stone or stones built into a wall that protrude from the main plane of the wall face. Sometimes bedrock protrudes into a room and was modified for use as a shelf.

Doorstep: DS
This is a stepping stone that is situated below a wall entryway that serves as a step up to the opening. A doorstep is usually a protrusion built into the wall.

Bench: BE
This is a horizontal surface that is usually found in kivas. It is created by the top of the banquette and usually forms the building platform for pilasters. Data about benches in Kivas should be recorded on Sheet 1a: Kiva Supplemental Data Form.

Pilaster: PI — This is a constructed column that serves to support the roof of a structure. Generally these are found in kivas. Data about pilasters in kivas should be recorded on Sheet 1a: Kiva Supplemental Data Form.

Exposed Floors and Floor Sub-features

This catagory of architectural space include the floor(s) of an architectural space and its floor sub-features.

Pit (nfs): PT — This is a generic pit feature (not further specified). It is excavated below the grade of the floor or other horizontal surface. It may be any of various shapes and size. This feature type should be assigned only if the specific function of the pit feature cannot be determined or inferred.

Ash Pit: AP — This is a pit feature which was used to store ash remains from a hearth. Generally they are located near a hearth and are very shallow and basin-shaped.

Cist (storage bin): CS — This is a pit feature which was used for storage of food, water, or other items. Generally, a cist is a deep pit feature, that is wider at the base than at the opening (as in a bell-shaped cist), but they may also take on other shapes. Sometimes cists are lined with ollas (water jars), plaster, or other materials that may allow them to hold water. They generally don't show evidence of burning, although sometimes they will have been cured by fire to harden the surface.

Floor Vault: VA — Generally a floor vault is a quadrilateral feature that is well-built with a formal shape. Its walls are upright slabs or, in later features, masonry. The corners of a vault are angular, in contrast to the rounded margins of a cist. They are often interpreted to be either formal storage features or foot drums.

Loom Anchors: LA — These are small bell-shaped pit features which were used to anchor the base of a loom. They are often found in kivas and are arranged in straight line. Fill within these features is usually post-occupational sterile deposits. If intact, a loom anchor will have an organic loop protruding from its mouth. This loop will top out near floor grade.

Ladder Holes: LDR — These are small basin-shaped pit features that were used to hold a ladder in position. The distinction between ladder holes and other small pit features is generally their spacing and location. Ladder holes occur in pairs and are placed in locations that are convenient for ladder usage (usually near the hearth in kivas).

Hearth: H — This is a pit feature which was utilized for fires and fire-related activities. They can be various sizes and shapes, but are most often round or oval with a basin-shaped bottom. They are usually oxidized from intense heating, and fill consists of many layers of ash and charcoal. Often hearths are slab-lined or coped around the surface. This adds a set of dimensions which would not otherwise be measured for pit features (see diagrams that follow for examples of these dimensions).

Pot Rest: PR — This is a pit feature that is relatively small, shallow and basin-shaped. It would have been used to support a pot, and so would not be oxidized. Fill is generally clean sand or post-occupational sterile deposits.

Post Hole: PS — This is a pit feature that was used to support a vertical post. They are generally deeper than they are wide, a practical shape for holding an upright post. Often posts have been removed during secondary occupations of the area, and so all that remains is the hole with organic material, roof collapse materials and post-occupational deposits.

Sipapu: S — This is a small pit feature that is specific to pit structures. It is generally small and cylindrical in shape. It is often lined with a ceramic or plaster lining at the lip of the feature and is usually filled with sterile sand.

Grinding slick: GS — This is a indentation worn into a surface (usually rock) by a repeated grinding motion. They are usually shallow and basin-shaped with obvious directional patterning. The feature may have been used for tool shaping, food grinding, pigment grinding, or other grinding activities.

Awl Grooves: AG — This is another sort of grinding indentation. These are usually long thin incisions into stone surfaces. They are formed for the purpose of shaping awls.

Entry Box: EB — This is a feature made of vertical slabs set into the floor in front of an entryway. It forms a box into which a person must step to enter the structure. Entry boxes are generally no higher than 25 cm. They are found almost exclusively in the Kayenta region.

Partition Wall: PW — This is a wall built to sub-divide a larger space, such as a wing wall in pit houses.

Wing wall: (see partition wall) — This is a short wall that is generally found in pithouses extending from the deflector to the walls on either side of the structure. Sometimes these are also found in kivas and surface structures. They should be recorded as a "Partition Wall" (see above).

Deflector: DE — This is a feature that is associated with hearths. It is usually an upright slab or short free-standing masonry wall that serves to deflect the ventilator air flow from directly blowing on the hearth. It is, therefor, located between the ventilator port and the hearth in kivas.

Step Stone: ST — This is a stone or series of stones that rests on the floor surface. They are usually located beneath a doorway or access to a ledge.

Mealing Bin: MB — This is a feature that usually consists of three or four short walls enclosing a space where grinding activities took place. Sometimes a metate and other grinding tools are still present within or near the feature. They are often rectangular and sometimes enclose enough space for several grinding "stations".

Features related to Roof Construction

These features describe the sockets within an architectural space.

Primary Socket:
SK__P

This is a feature, usually constructed into a wall, that was designed to support a primary beam (viga) in a roof structure. A socket generally also contains a portion of the casting from the beam that it once supported. The socket is the actual structure of the feature, whereas the casting is the fill material (generally adobe mortar and chinkers) used to hold the beam in place within the socket. Be sure to make this distinction when recording socket/casting details.

Secondary Socket:
SK___S

This is a feature, usually constructed into a wall, that was designed to support a secondary beam (latilla) in a roof structure. Secondary sockets are generally located on the walls parallel to the primary sockets, are smaller than primary sockets, and are slightly higher than the primary sockets in the same room.

Generic Socket:
SK___G

When a socket cannot be determined to be a primary or secondary socket, it is designated as a generic socket. This may include sockets that held tie beams as well as indeterminate roof sockets.